985

Catalog of Government Patents

INVENTIONS AVAILABLE FOR LICENSING TO U.S. BUSINESSES

1985

PB86-116175

C51.16:

ALSO DESCRIBES 90 FEDERAL TECHNICAL INFORMATION CENTERS

NOW! Work Directly with Government Labs and Engineering Facilities

"The Directory should be popular in research and business libraries"

—Reference Book Bulletin
American Libraries Association

Find them easily in the Directory of Federal Laboratory & Technology Resources. This valuable directory will guide you to hundreds of Federal agencies, laboratories, and engineering centers willing to share their expertise, equipment, facilities, and special services to aid your research and engineering efforts. Detailed summaries of these unique resources are arranged in 31 subject oriented areas for easy reference.

Descriptions of 90 Technical Information Centers are also described!
These centers offer information services and expertise in areas such as fuels, cold regions, concrete, fisheries, toxicology, pesticides, plastics, and many others.

The NAME, ADDRESS, PHONE number of a PERSONAL CONTACT is listed for each resource!

Help is available in 31 technical areas including:
Aeronautics • Agriculture & Food • Biological Sciences • Building Technology • Computer Technology • Electrotechnology • Energy • Engineering • Environmental Sciences • Manufacturing • Materials • Medicine • Nuclear • Ocean Sciences & Technology • Physical Sciences • Transportation • Plus others

Four detailed indexes make it easy to locate the resource you need.

1. **Subject Term Index**
Look up your subject topic, i.e. Nondestructive tests; Erosion control; Solar energy; Robotics, to find the individual resources relating to that topic.

2. **State Index**
Look up all the resources and laboratories located in a particular State.

3. **Resource Name Index**
Look up any resource by name of laboratory or program.

4. **Agency Index**
Find resources and laboratories by agency and State.

All listed resources offer unique capabilities (not readily duplicated in the private sector) to encourage greater use for Federal technology.

To increase your awareness of hundreds of Federal Technology Resources available to work with you on your projects, order your DIRECTORY now!

ASK FOR the *Directory of Federal Laboratory and Technology Resources-A Guide to Services, Facilities, and Expertise,*
Order number PB86-100013/AAW
Price $29 plus $3 for shipping and handling. (280 pp. ISBN 0-934213-00-3).

CALL: (703) 487-4650 and use your American Express, VISA, MasterCard, or NTIS deposit account.

Others should send a check to the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Catalog of Government Patents-1985

Inventions Available for Licensing By U.S. Business

prepared by the
Center for the Utilization of Federal Technology
National Technical Information Service
U.S. DEPARTMENT OF COMMERCE

NEWARK PUBLIC LIBRARY

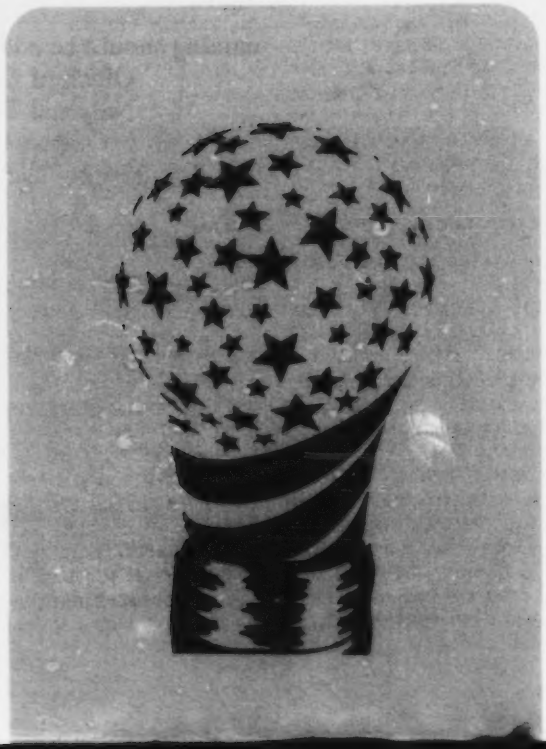
1985

APR 23 1986

U. S. GOVT. PUBS.
DEPOSITORY 326

U.S. Department of Commerce
Malcolm Baldrige, Secretary

Joseph F. Caponio
Director, National Technical Information Service



READEX FICHE best copy available

Neither the United States Government nor any other person acting on behalf of the United States Government assumes any liability resulting from the use of the information contained in this document. The publication of this document constitutes neither dedication nor transfer of any property rights of the patents cited herein.

COPYRIGHT WARNING

International Copyright © National Technical Information Service, 1986. All portions of this publication are protected against copying or other reproduction outside of the United States under the provisions of Article II of the Universal Copyright Convention. United States copyright is not asserted under the United States Copyright Law, Title 17, United States Code.

Any suggestions or comments concerning this catalog should be addressed to:

Program Manager, Room 11R
Center for the Utilization of Federal Technology
National Technical Information Service
Springfield, VA 22161

Information on licensing Government inventions described in this catalog should be addressed to:

Office of Government Inventions and Patents
National Technical Information Service
P.O. Box 1423
Springfield, VA 22151

International Standard Book Number ISBN 0-934213-01-1

International Standard Serial Number ISSN 0748-8858

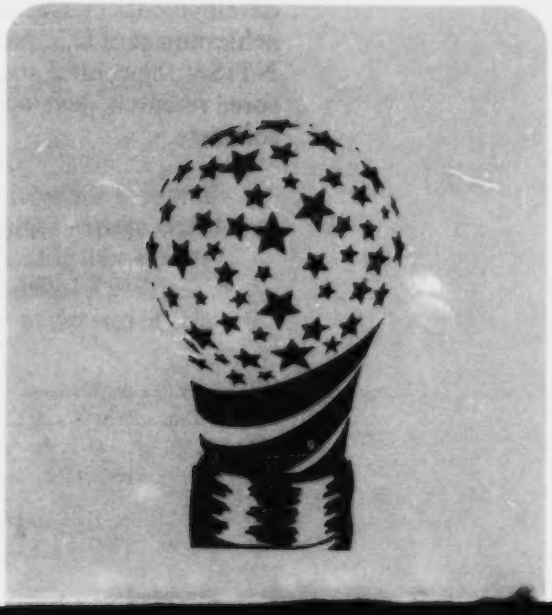
For sale by the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. Price $29 plus $3 for shipping and handling. Order number PB86-116175. See the patent application order form for ordering instructions and information about the 1981, 1982, 1983, 1984 catalogs.

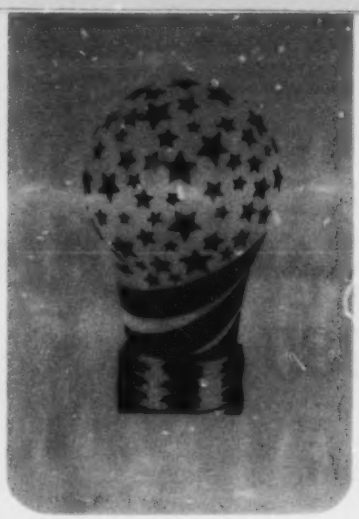
Catalog of Government Patents-1985

Inventions Available for Licensing By U.S. Business

Contents

iv	About Federal Technology Transfer
v	About This Catalog
v	How to Use this Catalog
vi	Licensing Government Inventions
1	Invention Summaries
SU-1	Subject index
IN-1	Inventor index
at end	Subscription to *Government Inventions Weekly Abstract Newsletter*
	Order form for Patents
	Order form for Patent Applications





Federal Technology Transfer and the Center for the Utilization of Federal Technology

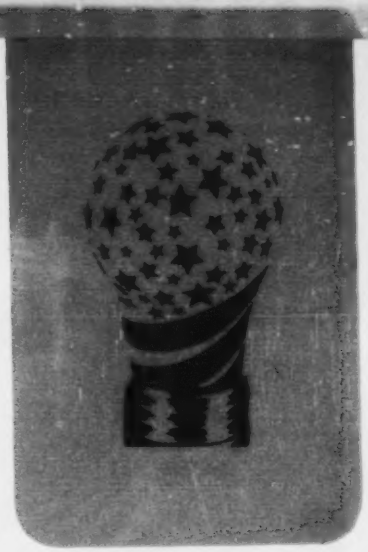
A new organization has now been established within the National Technical Information Service (NTIS) to alert industry to selected Federal technology having immediate practical value. It is the *Center for the Utilization of Federal Technology* (CUFT), and it was established in response to the recently enacted Stevenson-Wydler Technology Innovation Act. CUFT is working with Federal agencies and their laboratories to select and highlight new technologies which have potential commercial or industrial application.

Starting with many thousands of companies who are customers of NTIS, the Center is drawing upon NTIS' resources to alert industry to this *selected* technology. It is expanding the announcement of Government inventions available for licensing, increasing the technology fact sheets in its Tech Note service, and preparing new special current awareness catalogs, directories, and services.

About The Stevenson-Wydler Technology Innovation Act

The Stevenson-Wydler Technology Innovation Act was enacted to encourage the transfer of Federal technology to the U.S. economy. It requires each Federal agency conducting R&D and their major laboratories to identify technology having potential commercial or practical application and to take steps to encourage the transfer of this technology. As part of this effort, agencies and their laboratories have established Offices of Research and Technology Assessment (ORTA) to locate and identify potential practicable technologies. Along with the establishment of these offices, the law also created the *Center for the Utilization of Federal Technology (CUFT)*. The Center, at NTIS, will be working with the Offices of Research and Technology Assessment to receive and disseminate information on their newly developed technologies.

CUFT was established within the National Technical Information Service (NTIS) of the Department of Commerce because, as a national technical information clearinghouse and a cornerstone of the technology publishing structure in the United States, NTIS is a key participant in the development of advanced information products and services for the achievement of U.S. productivity and innovation goals in the 1980's. NTIS is the central source for the public sale of U.S. Government-sponsored research, development, and engineering reports and computer software.



About This Catalog

It has long been realized that a substantial portion of Government-developed technology could be used to develop commercial products and processes. Historically, however, commercial utilization of Government invention technology has been low. The Government generally provided little incentive and protection for investment by the private sector in continued technical development and commercialization of promising inventions.

In order to promote wider private sector use of Government inventions, the Department of Commerce established the Office of Government Inventions and Patents within NTIS. This office administers a program of public licensing, evaluates many of these inventions, and promotes those identified as having commercial potential. In addition, this office obtains foreign patent protection on selected inventions to protect valuable commercial markets for domestic industry.

This catalog was designed to make it easy for businesses to scan and identify promising Government inventions. The 1,100 inventions announced in 1985 have been divided into 43 subject areas so that readers can quickly browse in specific areas of interest. To further enhance the value of the publication, detailed subject and inventor indexes are included.

How to Use The Catalog

The catalog consists of three sections: (1) 1,100 invention summaries arranged into 43 subject-oriented categories, (2) a subject term index, and (3) an inventor index. In the invention summary section, each invention is described in full detail for each primary entry. Cross references are provided in other categories when appropriate. Within each category, all patent applications are listed chronologically by filing date followed by patents.

How To Order Copies of Patents and Patent Applications

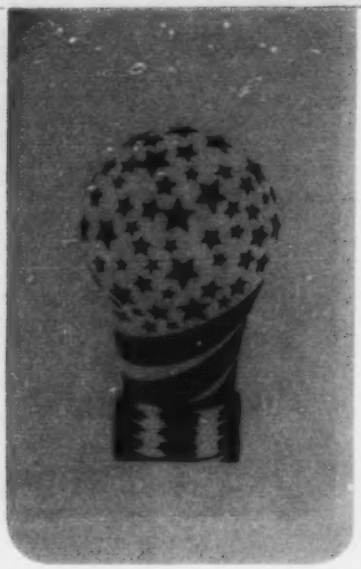
Separate order forms are provided at the back of the publication for ordering copies of both patents and patent applications.

ORDERING PATENTS

U.S. Government patents are sold by the U.S. Patent and Trademark Office. Each patent costs $1.00.

ORDERING PATENT APPLICATIONS

U.S. Government patent applications are available from the National Technical Information Service. Their price varies with the page count of the application. Each patent application in the catalog lists a price code for that application. A price code table giving actual prices is printed on the special patent application order form at the end of this catalog.



Licensing Government Inventions

Until recently, non-exclusive licensing of Government inventions involved a low percentage of the patents available. Under new regulations, exclusive licenses are offered as an incentive to transfer Federal technology to U.S. industry and encourage venture capital investment in improving the nation's technology base.

When you locate a Government invention you wish to consider licensing for commercial development, first obtain a copy of the patent or patent application for specific technical details. (See page viii for ordering information.)

If you have further interest after obtaining a copy of a particular patent or patent application, contact the Office of Government Inventions and Patents. This office handles the licensing of inventions on behalf of many cooperating Federal agencies. Equivalent foreign patent applications are filed on selected inventions to protect potential foreign markets and are available for licensing to U.S. industry. Inquiries will be referred to the appropriate licensing offices of those agencies which handle their own licensing.

CONTACT:
Office of Government Inventions and Patents
National Technical Information Service
P.O. Box 1423
Springfield, VA 22151

Subscribing to the *Government Inventions for Licensing Abstract Newsletter*

As an alerting service to the most recent Government inventions, NTIS offers a weekly abstract newsletter available on subscription. Offering a summary of the invention, a diagram if available, and other pertinent information, this newsletter is an easy means for businesses to discover new licensing opportunities. See the special full page description at the back of this publication.

Invention Summaries

This section arranges invention summaries into at least one of the following subject areas. Within each subject area, summaries are arranged by title.

Agriculture & Food

Chemistry
Analytical chemistry
Industrial chemistry & process engineering
Synthetic chemistry

Communications

Couplings, fittings, & fasteners

Computers

Detection
Acoustic detection
Optical detection
Radiofrequency detection

Electrotechnology
Antennas
Circuits
Electromechanical devices
Resistive, capacitive, & inductive components
Semiconductor devices
Other

Energy
Heating & cooling
Fuels
Solar
Other

Hydraulic & pneumatic equipment

Instrumentation & test equipment

Machinery & tools

Manufacturing processes

Marine technology

Materials
Adhesives & sealants
Coatings
Composites
Fibers & textiles
Metals
Plastics & elastomers
Other

Medicine & biology
Instruments & equipment
Pharmacology
Other

Mining

Navigation & guidance

Photography & recording devices

Physics
Optics
Other

Transportation
Aircraft
Other

Sample Entries

Catalog reference number

Government agency filing application

Application page count

Patent application number. Use in ordering copy

Price of patent application. See NTIS Patent Application Order form at end of catalog

Summary of invention

66;6 Integral/Low Voltage Control for Miniature Impact Tool
Phillips, Raymond J.
Department of the Navy, Washington, DC.
Filed 11 May 81 8p
PAT-APPL-6-262-881 Available from NTIS: Price code A02

The patent application describes a miniature impact tool that has an electrical switch mounted on the tool for ease of operation. The switch is connected to a bench mounted speed control unit that has a built-in relay and transformer for safety. The line that is operated by the switch is on the low voltage side of the transformer to reduce any chance of electrical shock. The speed control unit is electrically connected to a drive motor. The drive motor has a flexible drive shaft connected to the tool for mechanically driving the tool.

Patent number. Use when ordering patents from Commissioner of Patents

Government agency receiving patent

Pages in patent

Invention summary

1129 Vehicle Suspension Using Pressurized Bourdon Tubes
Petrick, Ernest N.
Department of the Army, Washington, DC.
Filed 10 Dec 79 patented 10 Mar 81 6p
PATENT-4,254,970 Available from Comm. of Patents

The patent describes a vehicle suspension especially for tracked vehicles, comprising an internally pressurized Bourdon tube operatively located between the sprung mass and each road wheel. A single liquid pump can be used to selectively pressurize difference ones of the Bourdon tubes to different pressure values in accordance with expected loadings for particular ones of the road wheels. Depressurization of all Bourdon tubes can be used for vehicle height control, as for example to reduce the silhouette of a military vehicle and/or reduce ground clearance.

Cross Reference

Summary catalog number

A Thermal Energy Transformer
See 0076

Catalog subject category where the full summary appears

INVENTION SUMMARIES

AGRICULTURE & FOOD

0001 Animal Nutrition
S. M. Laurent, W. G. Pond
Department of Agriculture, Washington, DC
Filed 24 May 83, patented 7 May 85 5p
PATENT-4 515 780 Available from Comm. of Patents
A feed formulation for animals, particularly ruminant animals, and especially sheep, containing a small amount of zeolite. A method of inhibiting the formation of kidney stones or urinary calculi in animals, wherein a small amount of zeolite, especially synthetic zeolite A, up to about five weight percent is added to a feed formulation otherwise containing sufficient nutrients, for said animals.

0002 Apparatus to Improve the Operation of a Continuously Moving Harvester for Tree Crops
D. L. Peterson
Department of Agriculture, Washington, DC
Filed 9 May 85 28p
PAT-APPL-6-732 320 Available from NTIS: price code A03
The invention relates to a continuously moving harvester for tree crops. More specifically, this invention relates to an automatically sequencing trunk shaker on the harvester and to apparatus for preventing damage to a tree by a trunk shaker when the shaker is withdrawn from the tree. The invention also relates to a tree trunk seal and catching surface for the fruit or other product catching surface.

0003 Control of Eastern Black Nightshade with a Fungal Pathogen
R. N. Andersen, H. L. Walker
Department of Agriculture, Washington, DC
Filed 29 May 85 17p
PAT-APPL-6-738 707 Available from NTIS: price code A02
The invention relates to a method of controlling eastern black nightshade by means of infection with a fungal pathogen. The merits for using pathogens to control weeds in annual crops have been discussed previously for various fungal species. A related species, C. malvarum, has been reported by Templeton in U.S. Patent No. 3,999,973 as a control for prickly sida (Sida spinosa) or teaweed, particularly in soybean and cotton fields. C. malvarum is also pathogenic toward other noncultivated species, including velvetleaf. The authors have now discovered a strain of Colletotrichum coccodes which is pathogenic toward eastern black nightshade but innocuous toward virtually all crop species. The invention is drawn to the use of this fungus as a mycoherbicide for controlling eastern black nightshade and other susceptible species.

0004 Control of Mycotoxin Production by Chemically Inhibiting Fungal Growth
D. M. Wilson, R. C. Gueldner
Department of Agriculture, Washington, DC
Filed 4 Oct 83, patented 2 Oct 84 3p
PATENT-4 474 816 Available from Comm. of Patents
An effective method to control aflatoxin produced by toxic strains of Aspergillus parasiticus fungi is disclosed. An effective amount of Beta-ionone is applied to said fungi to inhibit the growth and sporulation of the fungi and thereby control production of aflatoxin from the fungi without killing the fungi.

0005 Diagnostic Reagent for Swine Trichinosis
H. R. Gamble, K. D. Murrell
Department of Agriculture, Washington, DC
Filed 18 Dec 84 33p
PAT-APPL-6-683 284 Available from NTIS: price code A03
The patent application pertains to a new hybrid cell line formed by the fusion of a mouse myeloma cell with a mouse spleen cell and to an antibody molecule secreted by the hybrid cell.

0006 Freeze Dried Raw Meats
D. Berkowitz
Department of the Army, Washington, DC
Filed 3 Dec 84 9p
PAT-APPL-6-677 274 Available from NTIS: price code A02
This patent application describes a method of producing a freeze dried raw meat product which is more easily and more completely rehydratable which is produced by expanding the matrix of the meat through the addition of water. The matrix expansion is enhanced by the addition of adjunctive hydrophilic ingredients which are incorporated in the meat to act as wicking, wetting or emulsifying agents. Following the mixing of the ingredients which equilibrate throughout the meat, the meat is frozen, then sliced and finally freeze vacuum dehydrated to a predetermined moisture level.

0007 Granulation of Urea Phosphate from Urea and Merchant-Grade Phosphoric Acid
C. P. Harrison
Tennessee Valley Authority, Muscle Shoals, AL
Filed 30 Apr 84, patented 23 Apr 85 13p
PATENT-4 512 793 Available from Comm. of Patents
The invention is a process for direct granulation of unpurified urea phosphate from urea and merchant-or filter-grade wet-process phosphoric acid to produce a product with exceptional satisfactory physical and chemical properties for direct application to the soil or for use in production of fluid fertilizers. The process involves the utilization of sweep air in both the reactor and the granulator to remove water from the heat-sensitive urea phosphate mixture to enhance the granulation characteristics of the product. Product drying with applied heat after granulation is essentially eliminated.

0008 Method and Apparatus to Control Soil Moisture Matric Potential
H. T. Wilkinson
Department of Agriculture, Washington, DC
Filed 14 Sep 84 16p
PAT-APPL-6-650 737 Available from NTIS: price code A02
This invention relates to and has among its objects the provision of a novel method and apparatus for controlling the matric potential of a liquid in a porous medium (matrix) particularly water in soil. The apparatus includes a cylindrical porous cup for holding the sample, the cup having an air entry value greater than the matric potential to be imparted to the sample, an outer vesicle adapted to define a chamber between the cup and vesicle for holding the liquid, and means for adjusting the pressure of the liquid in the chamber.

0009 Method for Detecting Aflatoxin in Almonds
J. E. Schade, A. D. King
Department of Agriculture, Washington, DC
Filed 24 Aug 84 21p
PAT-APPL-6-643 990 Available from NTIS: price code A02
The instant invention for the first time provides a simple and rapid method to detect aflatoxin contamination in almonds. In the method of the invention, almond kernels are exposed to long wave ultraviolet light, and aflatoxin contamination on the kernels is detected by violet-purple fluorescence.

0010 Method for Predicting the Acceptability of Coarsely Ground Beef
A. D. King, P. S. Nassos-Stalder
Department of Agriculture, Washington, DC
Filed 7 Jun 85 19p
PAT-APPL-6-742 485 Available from NTIS: price code A02
A method for predicting the future acceptability of coarsely ground beef after regrinding and aerobic storage under specified conditions of time and temperature by measurement of the concentration of lactic acid in the sample is described. The method includes the steps of setting up a data base which relates the values of the initial concentration of lactic acid in samples of coarsely ground beef to odor acceptability of the samples after regrinding and aerobic storage for specified conditions of time and temperature, and measuring the initial lactic acid in the test sample and predicting future acceptability with reference to the data base. Based on the prediction value, a decision is made whether the beef is acceptable for the intended purpose.

0011 Method for Preparing Improved Quality Rice-Containing Baked Products
M. M. Bean, K. D. Nishita, E. A. Hoops
Department of Agriculture, Washington, DC
Filed 24 Sep 82, patented 2 Apr 85 7p
PATENT-4 508 736 Available from Comm. of Patents
Rice flour obtained from medium and/or short grain rice is hydrated with water under selected conditions to improve baking performance and obtain improved quality rice-containing baked products. A novel formulation to prepare a rice flour layer cake free of wheat, milk and eggs is disclosed.

0012 Method for Reducing Sodium Content and Simultaneously Increasing Potassium Content of a Food
W. M. Camirand
Department of Agriculture, Washington, DC
Filed 16 Mar 83, patented 5 Mar 85 4p
PATENT-4 503 082 Available from Comm. of Patents
The sodium content of a food is reduced and the potassium content simultaneously increased by a process wherein an aqueous solution of a sodium-containing food and an aqueous solution containing potassium ions are circulated on opposite sides of a cation exchange membrane for a time and at a rate sufficient to exchange at least a portion of the sodium and potassium ions.

0013 Method for Screening Bacteria and Application Thereof for Field Control of Pythium spp. on Small Grain Crops
D. M. Weller, R. J. Cook, J. O. Becker
Department of Agriculture, Washington, DC
Filed 14 Sep 84 21p
PAT-APPL-6-650 739 Available from NTIS: price code A02
The authors have discovered a novel method for screening bacteria to select those strains which will suppress (reduce the incidence or severity of) disease in small grain crops such as wheat, oats, barley, rye, triticale, and related crops caused by the pathogen complex Pythium spp. When used as a seed or furrow treatment, the novel bacteria obtained by our method have the ability to suppress Pythium spp. under field conditions.

0014 Method of Making Stable Emulsified Meat Products
J. B. Fox
Department of Agriculture, Washington, DC
Filed 28 May 82, patented 23 Oct 84 4p
PATENT-4 478 859 Available from Comm. of Patents
An emulsified meat product is made stable and resistant to acid deterioration by adding to the product up to 0.5% xanthan gum. The salt content of the emulsified product is reduced about five-fold by storing the product in an acidic pickle.

0015 Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
A. W. Schwab, E. H. Pryde
Department of Agriculture, Washington, DC
Filed 24 Sep 82, patented 2 Jul 85 8p
PATENT-4 526 586 Available from Comm. of Patents
Hybrid fuel microemulsions are prepared from vegetable oil, a C1-C3 alcohol, water, and 1-butanol as the nonionic surfactant. These fuels are characterized by an acceptable viscosity and compare favorably to No. 2 diesel fuel in terms of engine performance properties.

0016 Modified Starches as Extenders for Absorbent Polymers
G. F. Fanta, W. M. Doane, E. I. Stout
Department of Agriculture, Washington, DC
Filed 10 Dec 82, patented 20 Nov 84 4p
PATENT-4 483 950 Available from Comm. of Patents
St arch-based superabsorbents are extended by blending with highly modified, low molecular weight starches. The dextrinized starches synergistically interact with the superabsorbents thereby permitting dilution without a commensurate reduction in the water absorbency. While the principal utility of the blends is the absorption of aqueous fluids, when hydrated they yield soft, smooth gels useful as high-quality thickening agents. Medical applications include incorporation into body powders and wound dressings, particularly for the treatment of decubitus ulcers or bed sores. Although superabsorbents enjoy a broad fluid of application, their cost is often an inhibiting factor in their widespread commercial acceptance, particularly in agriculture.

Monoclonal Antibodies to Epizootic Hemorrhagic Disease Virus Antigen
See 0928

0017 Polyunsaturated Fatty Acids from Fish Oils
V. F. Stout
Department of Commerce, Washington, DC
Filed 28 Mar 85 23p
PAT-APPL-6-716 913 Available from NTIS: price code A02
The present invention relates to a process for the concentration of polyunsaturated fatty acids present in fish oils.

0018 Production of Defatted Soybean Products by Supercritical Fluid Extraction
J. P. Friedrich, A. C. Eldridge
Department of Agriculture, Washington, DC
Filed 20 Sep 83, patented 15 Jan 85 5p
PATENT-4 493 854 Available from Comm. of Patents
The raw grassy and bitter principles in soybeans are reduced to acceptable levels for purposes of human consumption without significant degradation of the nutritional properties. This result is achieved by a lipid extraction process in which raw soybean material is treated with carbon dioxide under carefully controlled supercritical conditions. Of particular importance are the moisture content of the bean material as well as the pressure, temperature, and contact time of the carbon dioxide extractant.

0019 Production of Food-Grade Corn Germ Product by Supercritical Fluid Extraction
D. D. Christianson, J. P. Friedrich
Department of Agriculture, Washington, DC
Filed 25 Oct 82, patented 22 Jan 85 1p
PATENT-4 495 207 Available from Comm. of Patents
A high-protein, food-grade product is prepared by defatting dry-milled corn germ fractions with carbon dioxide under supercritical conditions. The residual lipid and peroxidase activity responsible for development of off-flavors during storage are reduced to a fraction of the levels obtainable by conventional hexane extraction methods. It is an object of the invention to provide a process of producing a high-quality, food-grade corn germ product suitable for human consumption.

0020 Production of High-Analysis Ammonium Orthophosphate Suspension Fertilizers by a New Batch-Type Process
T. M. Jones, L. A. Kendrick
Tennessee Valley Authority, Muscle Shoals, AL
Filed 27 Feb 84, patented 16 Apr 85 10p
PATENT-4 511 388 Available from Comm. of Patents
5The invention describes an improved process for the production of highly concentrated (N-P2O5) suspension fertilizers effected by the ammoniation of wet-process or other impure orthophosphoric acids in batch-type equipment. The underlying concept which goes to the gist of the instant invention involves the use of a heel of product from a previously prepared batch to provide nuclei and a suitable environment for the conversion of the metallic impurities therein into crystalline habits rather than the usual highly undesirable form of metallic impurity gel-like compounds, which gels cause extremely high viscosities, nonpourability, and complete destruction of fluidity in concentrated ammonium phosphate suspension fertilizers prepared by prior-art procedure.

0021 Recirculating Wiper for Agricultural Chemicals
J. M. Chandler
Department of Agriculture, Washington, DC
Filed 9 Feb 82, patented 18 Sep 84 9p
PATENT-4 471 570 Available from Comm. of Patents
The invention describes a new apparatus which dispenses liquid agricultural chemicals upon physical contact with foliage and recovers excess chemical for reuse is disclosed. A hollow horizontal cylindrical chamber with an opened section forms a mounting means. An expanded metal section with an external fabric covering is affixed over the opening. Means is provided for spraying agricultural chemical onto the fabric, recovering and recirculating the excess chemical for reuse, and moving the saturated fabric into contact with foliage or plants.

0022 Rope Wick Applicator
J. E. Dale
Department of Agriculture, Washington, DC
Filed 18 Sep 79, patented 30 Apr 85 10p
PATENT-4 513 528 Available from Comm. of Patents
A new apparatus and system for the systematic application of liquid chemicals to plants is disclosed. A soft woven nylon rope wick is used to convey chemical solution from a reservoir by means of capillary action. The rope apparatus, which is physically supported, is leveled and positioned to selectively contact certain plants as the wick is moved across an agricultural field. Thus chemical solution is deposited selectively only on contact with the wick.

0023 Salinity Driven Oceanographic Upwelling
D. H. Johnson
Department of Energy, Washington, DC
Filed 30 Aug 84 28p
PAT-APPL-6-645 650 Available from NTIS: price code A03
The salinity driven oceanographic upwelling is maintained in a mariculture device that includes a long main duct in the general shape of a cylinder having perforated cover plates at each end. The mariculture device is suspended vertically in the ocean such that one end of the main duct is in surface water and the other end in relatively deep water that is cold, nutrient rich and relatively fresh in comparison to the surface water which is relatively warm, relatively nutrient deficient and relatively saline. A plurality of elongated flow segregating tubes are disposed in the main duct and extend from the upper cover plate beyond the lower cover plate into a lower manifold plate. The lower manifold plate is spaced from the lower cover plate to define a deep water fluid flow path to the interior space of the main duct. Spacer tubes extend from the upper cover plate and communicate with the interior space of the main duct. The spacer tubes are received in an upper manifold plate spaced from the upper cover plate to define a surface water fluid flow path into the flow segregating tubes. A surface water-deep water counterflow is thus established with deep water flowing upwardly through the main duct interior for discharge beyond the upper manifold plate while surface water flows downwardly through the flow segregating tubes for discharge below the lower manifold plate. During such counterflow heat is transferred from the downflowing warm water to the upflowing cold water. The flow is maintained by the difference in density between the deep water and the surface water due to their differences in salinity. The upwelling of nutrient rich deep water is used for marifarming by fertilizing the nutrient deficient surface water. 1 fig.

0024 Spectrophotometric Method for Simultaneously Analyzing Protein and Fat Contents in Milk
M. E. Anderson, R. T. Marshall, M. M. Hulse
Department of Agriculture, Washington, DC
Filed 25 Aug 82, patented 5 Feb 85 8p
PATENT-4 497 898 Available from Comm. of Patents
By means of a novel triple-beam spectrophotometer, the protein and fat contents in milk can be simultaneously and rapidly determined. The system is self-compensating for discrepancies in the light path and for variations in lamp intensity, thereby yielding highly accurate analysis.

Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

0025 Topical Prophylaxis against Schistosomal Infections
R. E. Miller, W. A. Reid
Department of the Army, Washington, DC
Filed 15 Feb 85 37p
PAT-APPL-6-702 114 Available from NTIS: price code A03
In this patent applications, an improved method is provided for the prevention of schistosomal infections in animals. The topical application of a 2-hydroxy-benzoic anilide provides prophylactic protection against penetration by infective cercariae of the parasitic worms.

CHEMISTRY: Analytical Chemistry

0026 Apparatus and Method for Identification of Matrix Materials in Which Transuranic Elements Are Embedded Using Thermal Neutron Capture gamma-Ray Emission
D. A. Close, L. A. Franks, S. M. Kocimski
Department of Energy, Washington, DC
Filed 16 Aug 84 26p
PAT-APPL-6-641 522 Available from NTIS: price code A03
An invention is described that enables the quantitative simultaneous identification of the matrix materials in which fertile and fissile nuclides are embedded to be made along with the quantitative assay of the fertile and fissile materials. The invention also enables corrections for any absorption of neutrons by the matrix materials and by the measurement apparatus by the measurement of the prompt and delayed neutron flux emerging from a sample after the sample is interrogated by simultaneously applied neutrons and gamma radiation. High energy electrons are directed at a first target to produce gamma radiation. A second target receives the resulting pulsed gamma radiation and produces neutrons from the interaction with the gamma radiation. These neutrons are slowed by a moderator surrounding the sample and bathe the sample uniformly, generating second gamma radiation in the interaction. The gamma radiation is then resolved and quantitatively detected, providing a spectroscopic signature of the constituent elements contained in the matrix and in the materials within the vicinity of the sample.

Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
See 0495

Apparatus for Determining the Liquid Water Content of a Gas
See 0497

Biological Sensor for the Detection of Toxicants
See 0505

Chemical Sensor Matrix
See 0511

Correlation Spectrometer Having High Resolution and Multiplexing Capability
See 0515

Electrochemical Methane Sensor
See 0530

Improved Chemical Sensor Matrix
See 0558

Low-Pressure Water-Cooled Inductively Coupled Plasma Torch
See 0574

0027 Measurement of Radionuclides in Waste Packages
R. L. Brodzinski, R. W. Perkins, H. G. Rieck, N. A. Wogman
Department of Energy, Washington, DC
Filed 12 Sep 84 8p
PAT-APPL-6-649 625 Available from NTIS: price code A02
A method is described for non-destructively assaying the radionuclide content of solid waste in a sealed container by analysis of the waste's gamma-ray spectrum and neutron emissions. Some radionuclides are measured by characteristic photopeaks in the gamma-ray spectrum; transuranic nuclides are measured by neutron emission rate; other radionuclides are measured by correlation with those already measured.

Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
See 0578

Method and Apparatus for Sequential Fractionation
See 0583

Method and Apparatus for the Detection of Toxicants
See 0584

Method for Detecting Aflatoxin in Almonds
See 0009

Method for Simultaneously Monitoring Turnover Rate in Multiple Proteins
See 0926

Moisture Content and Gas Sampling Device
See 0594

Multi-Layer Coil Assembly Coaxially Mounted Around the Rotary Axis for Preparatory Countercurrent Chromatography
See 0595

Multi-Layer Coil Countercurrent Chromatograph with Adjustable Revolutional Radius
See 0596

Optical Waveguide Sensor for Methane Gas
See 0603

Oxygen Analyzer
See 0606

Portable Remote Laser Sensor for Methane Leak Detection
See 0611

Purification of Uromodulin
See 0893

0028 Quantitative Determination of Mineral Composition by Powder X-ray Diffraction
G. A. Pawloski
Department of Energy, Washington, DC
Filed 10 Aug 84 16p
PAT-APPL-6-639 287 Available from NTIS: price code A02
An external standard intensity ratio method is used for quantitatively determining mineralogic compositions of samples by x-ray diffraction. The meth od uses ratios of x-ray

intensity peaks from a single run. Constants are previously determined for each mineral which is to be quantitatively measured. Ratios of the highest intensity peak of each mineral to be quantified in the sample and the highest intensity peak of a reference mineral contained in the sample are used to calculate sample composition.

Remote Sequential Gas Sampler for Blasting Areas
See 0618

Reversible Optical Waveguide Vapor Sensor
See 0620

0029 Selective Detection of Species in Complex Matrices by SIMS (Secondary Ion Mass Spectrometry)
D. Kidwell
Department of the Navy, Washington, DC
Filed 5 Feb 85 37p
PAT-APPL-6-698 476 Available from NTIS: price code A03
A method is described of analyzing for selected molecules in a sample which consists of reacting the molecule with a reagent that produces a charged derivative which can be desorbed and analyzed using Secondary Ion Mass Spectrometry.

Soil Extraction Kit
See 0627

Solid Sorbent Air Sampler
See 0629

Time Resolved Extended X-Ray Absorption Fine Structure Spectrometer
See 0641

Trace Water Sensor
See 0643

Variable Temperature Trap
See 0650

CHEMISTRY: Industrial Chemistry & Process Engineering

Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
See 0491

0030 Acoustic Particle Separation
M. B. Barmatz, J. D. Stoneburner, N. Jacobi, T. Wang
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 19 May 82, patented 18 Jun 85 8p
PATENT-4 523 682 Available from Comm. of Patents
A method is described which uses acoustic energy to separate particles of different sizes, densities, or the like. The method includes applying acoustic energy resonant to a chamber containing a liquid of gaseous medium to set up a standing wave pattern that includes a force potential well wherein particles within the well are urged towards the center, or position of minimum force potential. A group of particles to be separated is placed in the chamber, while a non-acoustic force such as gravity is applied, so that the particles separate with the larger or denser particles moving away from the center of the well to a position near its edge and progressively smaller lighter particles moving progressively closer to the center of the well. Particles are removed from different positions within the well, so that particles are separated according to the positions they occupy in the well.

Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
See 0496

Apparatus for Producing Diamond-Like Carbon Flakes
See 0755

Disc Valve for Sampling Erosive Process Streams
See 0521

Dispersion Toughened Ceramic Composites and Method for Making Same
See 0776

Drying of Pulverized Material with Heated Condensible Vapor
See 0523

Electrolytic Cell
See 0531

Fluidized Bed Gasification of Extracted Coal
See 0388

Formation of Tungsten Monocarbide from a Molten Tungstate-Halide Phase by Gas Sparging
See 0840

Improved Catalysts for Carbon and Coal Gasification
See 0389

Improved Process for the Preparation of Fiber-Reinforced Ceramic Composites by Chemical Vapor Deposition
See 0780

Liquid Phase Epitaxy (LPE) of Silicon Carbide
See 1086

Low Defect, High Purity Crystalline Layers Grown by Selective Deposition
See 1088

Low Temperature Catalyst System for Methanol Production
See 0390

Low Temperature Catalysts and Process for Methanol Production
See 0391

Method and System for Producing Lower Alcohols
See 0392

0031 Method for Extracting Lanthanides and Actinides from Acid Solutions by Modification of Purex Solvent
E. P. Horwitz, D. G. Kalina
Department of Energy, Washington, DC
Filed 21 May 84 30p
PAT-APPL-6-612 199 Available from NTIS: price code A03
A process has been developed for the extraction of multivalent lanthanide and actinide values from acidic waste solutions, and for the separation of these values from fission product and other values, which utilizes a new series of neutral bi-functional extractants, the alkyl(phenyl)-N, N-dialkylcarbamoylmethylphosphine oxides, in combination with a phase modifier to form an extraction solution. The addition of the extractant to the Purex process extractant, tri-n-butylphosphate in normal paraffin hydrocarbon diluent, will permit the extraction of multivalent lanthanide and actinide values from 0.1 to 12.0 molar acid solutions.

CHEMISTRY: Industrial Chemistry & Process Engineering

Method for Growing Low Defect, High Purity Crystalline Layers
See 1089

0032 Method for Recovery of Actinides from Actinide-Bearing Scrap and Waste Nuclear Material Using O sub 2 F sub 2
L. B. Asprey, P. G. Eller
Department of Energy, Washington, DC
Filed 12 Sep 84 8p
PAT-APPL-6-649 626 Available from NTIS: price code A02

Method for recovery of actinides from nuclear waste material containing sintered and other oxides thereof and from scrap materials containing the metal actinides using O sub 2 F sub 2 to generate the hexafluorides of the actinides present therein. The fluorinating agent, O sub 2 F sub 2 , has been observed to perform the above-described tasks at sufficiently low temperatures that there is virtually no damage to the containment vessels. Moreover, the resulting actinide hexafluorides are not detroyed by high temperature reactions with the walls of the reaction vessel. Dioxygen difluoride is readily prepared, stored and transferred to the place of reaction.

Method for Removing Chlorine Compounds from Hydrocarbon Mixtures
See 0393

Method for the Deposition of High-Quality Crystal Epitaxial Films of Iron
See 1092

Method of Distributing Liquefaction Catalysts in Solid Carbonaceous Material
See 0395

0033 Nebulization Reflux Concentrator
V. G. Collins, W. R. Cofer
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 5 Nov 84 14p
PAT-APPL-6-668 432 Available from NTIS: price code A02

A nebulization reflux concentrator for removing trace gas contaminants from a sample gas is described. Sample gas from a gas supply is drawn by a suction source into a vessel. The gas enters vessel through an atomizing nozzle, thereby atomizing and entraining a scrubbing liquid solvent drawn through siphon tube from a scrubbing liquid reservoir. The gas and entrained liquid rise through concentrator and impinge upon a solvent-phobic filter, whereby purified gas exits through the filter housing and contaminanted liquid coalesces on the solvent-phobic filter and falls into reservoir.

Physico-Chemical Fracturing and Cleaning of Coal
See 0397

Polyunsaturated Fatty Acids from Fish Oils
See 0017

0034 Process and Apparatus for Growing a Crystal Ribbon
J. W. Thornhill
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 23 Apr 82, patented 4 Sep 84 13p
PATENT-4 469 552 Available from Comm. of Patents

A process and apparatus is disclosed for growing a crystal ribbon of a substance of theoretically infinite length from a melt of the substance. A pair of fixedly positioned edge defining members are partially submerged into the melt so as to break the surface of the melt at a predetermined distance from one another. The edge defining members are wettable by the melt and the predetermined distance substantially corresponds to the width of the crystal ribbon to be grown. The crystal ribbon is grown by contacting the surface of the melt with a seed ribbon between the edge defining members whereby a meniscus of the melt is established on the seed ribbon. The meniscus is stabilized by the meniscus of the melt on the edge defining members. Pulling the seed crystal ribbon away from the melt results in continuous growth of the crystal ribbon.

0035 Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch
K. P. Quinlan, T. E. Erstfeld
Department of the Air Force, Washington, DC
Filed 29 Oct 82, patented 18 Dec 84 7p
PATENT-4 488 914 Available from Comm. of Patents

The present invention relates, in general, to a process for depositing III-V semiconducter compounds as epitaxial films onto semiconductor substrates which are crystallographically compatible with said films. In a more particular aspect, this invention relates to a process for effecting a continuous, insitu, hydrogen chloride etch during the vapor phase epitaxial deposition of III-V mixed compounds onto semiconductor compounds. The resulting epitaxial structures find particular utility in the fabrication of double heterostructure lasers, light-emitting diodes and field effect transistors. III-V semiconductor compounds, as is well understood by those skilled in semiconductor technology, are those which include elements from group III and group V of the Periodic Table of Elements. The components can be binary, ternary, or quaternary mixtures of any of those elements.

0036 Process for the Production of Ethylene and Other Hydrocarbons from Coal
M. Steinberg, P. Fallon
Department of Energy, Washington, DC
Filed 15 Feb 84 24p
PAT-APPL-6-580 500 Available from NTIS: price code A02

The subject invention comprises the steps of first reacting particulate coal with methane at a temperature in the approximate range of 500 exp 0 C to 1100 exp 0 C and at a partial pressure of methane of less than about 200 psig for a period of less than 10 seconds. More preferably, the method of the subject invention is carried out at a temperature of approximately 850 exp 0 C to 1000 exp 0 C and a pressure of 50 psig for a period of approximately 1.5 seconds. Surprisingly, it has been found that in the practice of the subject invention not only are commercially significant quantities of ethylene produced, namely yields in excess of 10% (percent carbon converted to product), along with economically significant quantities of-benzene and light oils, namely toluene and xylene, but also that there is little, if any, net consumption of methane in the reaction and possibly even a small net production. Since it is apparent that the carbonaceous solids or char remaining after the reaction is carried out may be burned to provide the necessary energy to carry out the process of the subject invention, it is apparent that the subject invention advantageously provides a method for the conversion of coal to economically significant quantities of ethylene, benzene and light oils while requiring only coal and, possibly, small amounts of make-up methane. Other objects and advantages of the

subject invention will be apparent to those skilled in the art from a consideration of the attached drawings, the detailed description of the invention, and the experimental examples set forth below.

Process of Synthesizing Mixed BaO-TiO2 Based Powders for Ceramic Applications
See 0336

Production of Defatted Soybean Products by Supercritical Fluid Extraction
See 0018

Production of Lead from Sulfides
See 0961

Self-Actuating Vacuum Gas/Liquid Separator
See 0963

0037 Separation of Uranium from Technetium in Recovery of Spent Nuclear Fuel
H. A. Friedman
Department of Energy, Washington, DC
Filed 13 Jun 84 8p
PAT-APPL-6-559 501 Available from NTIS: price code A02

A method for decontaminating uranium product from the Purex 5 process comprises addition of hydrazine to the product uranyl nitrate stream from the Purex process, which contains hexavalent (UO sub 22/) uranium and heptavalent technetium (TcO sub 4 -). Technetium in the product stream is reduced and then complexed by the addition of oxalic acid (H sub 2 C sub 2 O sub 4), and the Tc-oxalate complex is readily separated from the 10 uranium by solvent extraction with 30 vol % tributyl phosphate in n-dodecane.

Shale Oil Dearsenation Process
See 0399

Solar-Heated Oil Shale Retort
See 0442

Solvent Treatment of Coal for Improved Liquefaction
See 0401

0038 Solvent Wash Solution
J. C. Neace
Department of Energy, Washington, DC
Filed 13 Mar 84 36p
PAT-APPL-6-589 241 Available from NTIS: price code A03

A process is claimed for removing diluent degradation products from a solvent extraction solution, which has been used to recover uranium and plutonium from spent nuclear fuel. A wash solution and the solvent extraction solution are combined. The wash solution contains (a) water and (b) up to about, and including, 50 vol % of at least one-polar water-miscible organic solvent based on the total volume of the water and the highly-polar organic solvent. The wash solution also preferably contains at least one inorganic salt. The diluent degradation products dissolve in the highly-polar organic solvent and the organic solvent extraction solvent do not dissolve in the highly-polar organic solvent. The highly-polar organic solvent and the extraction solvent are separated.

0039 UF Sub 6 -Recovery Process Utilizing Desublimation
R. S. Eby, M. J. Stephenson, D. H. Andrews, T. H. Hamilton
Department of Energy, Washington, DC
Filed 21 Dec 83 16p
PAT-APPL-6-654 113 Available from NTIS: price code A02

The invention is a UF sub 6 -recovery process of the kind in which a stream of substantially pure gaseous UF sub 6 is directed through an externally chilled desublimer to convert the UF sub 6 directly to an annular solid ring adhering to the interior wall of the desublimer. After accumulation of a desired amount of solid UF sub 6 , the desublimer is heated to liquefy the solid. Subsequently, the liquid is recovered from the desublimer. It has been found that during the heating operation the desublimer is subjected to excessive mechanical stresses. In addition, it has been found that the incorporation of a very small percentage of relatively noncondensable, nonreactive gas (e.g., nitrogen) in the UF sub 6 input to the desublimer effects significant decreases in the stresses generated during the subsequent melting operation. This modification to the process provides valuable advantages in terms of reduced hazard, lower operating costs for the desublimer, and increased service life for the desublimer and its auxiliaries. The new process is especially suitable for the recovery of enriched UF sub 6 from high-speed UF sub 6 gas-centrifuge cascades.

CHEMISTRY: Synthetic Chemistry

0040 (Vinyloxy)Chlorocyclotriphosphazenes
C. W. Allen, K. Ramachandran, R. Bright, J. C. Shaw
Department of the Navy, Washington, DC
Filed 30 Apr 84 17p
PAT-APPL-6-605 317 Available from NTIS: price code A02

The present invention allows one to incorporate the flame retardant property of the phosphazene into traditional commercial organic polymer. These flame retardants are chemically bonded to the polymer, rather than additives.

Abrasion-Resistant Durable-Press Acrylic Finishes for Cotton Textiles by Use of Nonoxidative Polymerization Initiators and Accelerators in Two-Stage Heat Curing
See 0790

0041 Antihypertensive Neutral Lipid
F. L. Snyder, M. L. Blank
Department of Energy, Washington, DC
Filed 26 Oct 84 12p
PAT-APPL-6-665 214 Available from NTIS: price code A02

The invention relates to the discovery of a class of neutral acetylated either-linked glycerolipids having the capacity to lower blood presure in warm-blooded animals. This physiological effect is structure sensitive requiring a long chain alkyl group at the sn-1 position and a short carbon chain acyl group (acetyl or propionyl) at the sn-2 position, and a hydroxyl group at the sn-3 position.

Antiinflammatory 2,3-Didemethylcolchicine and Derivatives
See 0885

0042 Azido Nitramino Ether Containing Solid Propellants
E. F. Witucki, J. E. Flanagan
Department of the Air Force, Washington, DC
Filed 6 Dec 83, patented 13 Nov 84 3p
PATENT-4 482 404 Available from Comm. of Patents
In accordance with this invention, there is provided a novel family of azido nitramino ethers which are energetic liquids and find particular utility as energetic plasticizers in advanced solid propellants. These include bis (2-azidoethoxymethyl) nitramine (MNDA) and 1, 12-diazido-3,10-dioxa-5,8-dinitrazadodecane (DDDD). They represent two examples of this family of amines and have been found to be unexpectedly effective in overcoming the problem of flame in the exhaust gases produced during the operational phase of a solid propellant composition. The primary object of this invention is to provide a novel family of azido nitramino ethers. Another object of this invention is to provide a novel solid propellant composition that produces only minimum amounts of flame during its operational phase. Still another object of this invention is to provide a novel family of azido nitramino ethers that find particular utility as energetic plasticizers for advanced solid propellant compositions.

0043 Azido Nitramino Ethers
E. F. Witucki, J. E. Flanagan
Department of the Air Force, Washington, DC
Filed 8 Apr 82, patented 3 Apr 84 3p
PATENT-4 440 687 Available from Comm. of Patents
This invention involves the synthesis of a novel family of azido nitramino ethers and their utilization as energetic plasticizers for advanced solid propellant compositions. They include the novel compounds bis (2-azido-ethoxymethyl) nitramine and 1,12-diazido,3,10-dioxa-5,8-dinitrazadodecane.

0044 Bagworm Moth Attractant and Plant Protectant
J. W. Neal, J. A. Klun, M. Schwarz, B. A. Leonhardt
Department of Agriculture, Washington, DC
Filed 29 Nov 82, patented 2 Oct 84 3p
PATENT-4 474 755 Available from Comm. of Patents
The racemate of 1-methylbutyldecanoate is synthesized and found to be a powerful attractant under field conditions for male bagworm moths. It is also found to suppress or inhibit completely the mating of female bagworm moths when applied to trees and shrubs in an effective mating suppressant or inhibiting amount.

0045 Biologically-Active Xanthine Derivatives
K. A. Jacobson, J. W. Daly, K. L. Kirk
Department of Health and Human Services, Washington, DC
Filed 26 Oct 84 30p
PAT-APPL-6-664 953 Available from NTIS: price code A03
Certain functionalized congeners of 1,3-dialkylxanthine exhibit high potency and selectivity as antagonists for A1- and A2-adenosine receptors and are suitable for attachment to probes, drug carriers, or solid supports. These derivatives are characterized by the presence of a phenyl at the 8 position para-substituted with a functionalized chain to provide high water solubility and high receptor affinity to such an extent that these compounds are suitable for use as antiallergenic, antiasthmatic, or cardiotonic drugs, central nervous system stimulants, and diuretics.

0046 Carbamates of Colchicine for Treatment of Gout
A. Brossi, P. Kerekes
Department of Health and Human Services, Washington, DC
Filed 17 Apr 84, patented 6 Aug 85 6p
PATENT-4 533 675 Available from Comm. of Patents

Chelating Agents for the Treatment of Iron Overload
See 0886

0047 Chemical Approach for Controlling Nadimide Cure Temperature and Rate
R. W. Lauver
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 14 Dec 83, patented 5 Feb 85 8p
PATENT-4 497 940 Available from Comm. of Patents
Polyimide resins suitable for use as composite matrix materials are formed by copolymerization of maleic and norbornenyl endcapped monomers and oligomers. The copolymers can be cured at temperatures under about 300 C by controlling the available concentration of the maleic endcapped reactant. This control is achieved by adding sufficient amounts of said maleic reactant or by chemical modification of either copolymer, to either increase Diels-Alder retrogression of the norbornenyl capped reactant and/or hold initiation and polymerization to a rate compatible with the availability of the maleic capped reactant.

0048 Chemical Approach for Controlling Nadimide Cure Temperature and Rate
R. W. Lauver
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 14 Dec 83, patented 22 Jun 85 8p
PATENT-4 495 339 Available from Comm. of Patents
Polyimide resins suitable for use as composite matrix materials are formed by copolymerization of maleic and norbornenyl end-capped monomers and oligomers. The copolymers can be cured at temperatures under about 300 C. by controlling the available concentration of the maleic endcapped reactant. This control can be achieved by adding sufficient amounts of said maleic reactant, or by chemical modification of either copolymer, to increase Diels-Alder retrogression of the norbornenyl-capped reactant and/or holding initiation and polymerization to a rate compatible with the availability of the maleic-capped reactant.

0049 Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
R. W. Lauver
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 14 Dec 83, patented 5 Feb 85 9p
PATENT-4 497 948 Available from Comm. of Patents
Polyimide resins suitable for use as composite matrix materials are formed by copolymerization of maleic and norbornenyl endcapped monomers and oligomers. The copolymers can be cured at temperatures under about 300 C by controlling the available concentration of the maleic endcapped reactant. Control can be achieved by adding sufficient amounts of said maleic reactant, or by chemical modification of either copolymers, so as to either increase Diels-Alder retrogression of the norbornenyl capped reactant and/or holding initiation and polymerization to a rate compatible with the availability of the maleic-capped reactant.

0050 Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
R. W. Lauver
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 14 Dec 83, patented 5 Feb 85 9p
PATENT-4 497 939 Available from Comm. of Patents
Polyimide resins suitable for use as composite matrix materials are formed by copolymerization of maleic and norbornenyl endcapped monomers and oligomers. The copolymers can be cured at temperatures under about 300 C by controlling the available concentration of the maleic endcapped reactant. This control can be achieved by adding sufficient amounts of said maleic reactant, or by chemical modification of either copolymer, so as to either increase Diels-Alder retrogression of the norbornenyl capped reactant and/or holding initiation and polymerization to a rate compatible with the available of the maleic-capped reactant.

Chemical Control of Nadimide Cure Temperature and Rate
See 0818

0051 Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
T. T. Tsai, F. E. Arnold
Department of the Air Force, Washington, DC
Filed 9 Mar 82, patented 10 Apr 84 8p
PATENT-4 442 293 Available from Comm. of Patents
Mono- and di-acetylenic-substituted 2-phenylbenzothiazoles are prepared by reacting the corresponding mono- or di-halogen-substituted 2-phenylbenzothiazole with an alkyne, such a 2-methyl-3-butyne-2-ol in the presence of a suitable catalyst.

Diffusely Reflecting Paints Including Polytetrafluoroethylene and Method of Manufacture
See 0759

Dimeric Enkephalins
See 0887

0052 Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
D. A. Carlson, J. R. McLaughlin
Department of Agriculture, Washington, DC
Filed 14 Mar 83, patented 2 Jul 85 6p
PATENT-4 527 000 Available from Comm. of Patents
Novel diolefin insect pheromone mimics are used to disrupt the sexual communication between insects when applied to an agricultural area in behaviorally effective amounts as follows: (Z)-1,12-heptadecadiene used for Heliothis zea Boddie; (Z)-15-methyl-1,9-heptadecadiene used for Trogoderma variabile; (E)-15-methyl-1,9-heptadecadiene used for Trogoderma glabrum; and (Z,Z)-1,12,14-heptadecatriene used for Amyelois transitella.

Electrically Conductive Doped Block Copolymer of Polyacetylene and Polyisoprene
See 0820

0053 Electrostatic Filtration of N2O4 for Removal of Solid and Vapor Contaminants
P. Mahadevan
Department of the Air Force, Washington, DC
Filed 31 May 85 18p
PAT-APPL-6-740 107 Available from NTIS: price code A02
The present invention relates generally to a process and apparatus of purifying a liquid, and, in particular, relates to a process and apparatus for purifying N2O4 that is used as a propellant. It has been known since the late 1960's that N2O4 propellant shipped and stored in mild steel containers may contain deleterious amounts of corrosion products (i.e., particulate and colloidal iron nitrate adduct contaminants) which can cause filter cloffing or flow decay and leakage. This can result in the reduction of oxidizer flow to the combustion chamber in thrusters which in turn may have major effects upon delicate orbital correction maneuvers. Therefore, it is essential that these contaminants in N2O4 be eliminated or reduced prior to loading the propellant onto space launch vehicles. An electrostatic filtration apparatus is used to significantly reduce contaminants in N2O4 vapor and liquid at ambient temperatures. The apparatus uses an electret filter having therein a stack of layers of electret material through which the N2O4 must pass. A flow blocking filter is added to the electret liquid filter to insure a sufficient time for removal of contaminants by said electret material. The filter is constructed of chemically inert materials to prevent additional contaminants.

Epoxy Phthalonitrile Polymers
See 0822

0054 Ethylenediamine Salt of 5-Nitrotetrazole and Preparation
K. Lee, M. D. Coburn
Department of Energy, Washington, DC
Filed 17 May 84 16p
PAT-APPL-6-611 557 Available from NTIS: price code A02
The ethylenediamine salt of 5-nitrotetrazole has been found to be useful as an explosive alone and in eutectic mixtures with ammonium nitrate and/or other explosive compounds. Its eutectic with ammonium nitrate has been demonstrated to behave in a similar manner to a monomolecular explosive such as TNT, and is less sensitive than the pure salt. Moreover, this eutectic mixture, which contains 87.8 mol% of ammonium nitrate, is close to the CO sub 2 -balanced composition of 90 mol%, and has a relatively low melting point of 110.5 C making it readily castable. The ternary eutectic system containing the ethylenediamine salt of 5-nitrotetrazole, ammonium nitrate and ethylenediamine dinitrate has a eutectic temperature of 89.5 C and gives a measured detonation pressure of 24.8 GPa, which is 97.6% of the calculated value. Both the pure ethylenediamine salt and its known eutectic compounds behave in substantially ideal manner. Methods for the preparation of the salt are described. (ERA citation 10:014371)

Fire and Heat Resistant Laminating Resins Based on Maleimido and Citraconimido Substituted 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diaminobenzenes
See 0823

Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824

0055 Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
J. A. Mikroyannidis
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 16 Aug 84 24p
PAT-APPL-6-641 143 Available from NTIS: price code A02

Phosphorus containing polyimides and copolyimides are synthesized in a two step polycondensation reaction from 1-(diorgano oxyphosphonyl)methyl-2,4- and -2,6-diaminobenzenes and tetracarboxylic anhydride. The diorgano position of the diorganooxyphosphonyl group includes alkyl, such as ethyl, substituted alkyl, such as s 2-chloroethyl, and aryl such as phenyl. The tetracarboxylic anhydrides include compounds such as pyromellitic dianhydride and benzophenone tetracarboxylic dianhydride. The glass transition temperature of the polyimides is reduced by incorporation of the (dialkoxyphosphonyl)methyl groups. Both the molecular weight and the thermal stability of the polymers are reduced with increasing concentration of the phosphorus moieties. The phosphorus containing copolyimides show a considerably higher dgree of fire resistance as compared to that of the corresponding common polyimides, and can be used in matrix composites composites in very thermally stable high temperature graphite composites for aircraft applications.

Fire-Resistant Phosphorus Containing Polyimides and Copolyimides
See 0825

Fluorinated Polyurethanes
See 0827

High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

0056 Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
K. A. Jacobson, K. L. Kirk, J. W. Daly, B. B. Fredholm
Department of Health and Human Services, Washington, DC
Filed 29 Jul 85 22p
PAT-APPL-6-759 677 Available from NTIS: price code A02
The amino congener of 1,3-dipropyl-8-phenylxanthine, (8-(4'-carboxymethyloxyphenyl)-1,3-dipropyl-xanthine-2-aminoethylamide), is injected into rats, followed by injection of 5'-N-ethylcarboxamidoadenosine (NECA). This combination approach results in the selective canceling out of part of the action of the broadly acting agonist (NECA). This invention discloses the reversal of cardiac depressant effects (A1) of NECA (a potent adenosine agonist which acts at both receptor subtypes) at doses of the amino congener which did not affect the hypotensive action of the adenosine analog. At present, there is no adenosine analog which acts alone in vivo in this selective manner. NECA is the most potent adenosine analog at A2-receptors (responsible for the hypotensive effect), but it is not A2-specific. Thus, the present invention achieves the net effect of A2-agonist selectivity through the combination approach.

0057 Metal (2) 4,4',4',4" Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
B. N. Achar, G. M. Fohlen, J. A. Parker
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 11 Apr 84, patented 27 Aug 85 7p
PATENT-4 537 834 Available from Comm. of Patents
Metal, preferably divalent copper, cobalt or nickel, phthalocyanine tetraamines are used as curing agents for epoxides. The resulting copolymers have high thermal and chemical resistance and are homogeneous. They are useful as binders for laminates, e.g., graphite cloth laminate.

0058 Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
K. C. Rice
Department of Health and Human Services, Washington, DC
Filed 19 Dec 84 20p
PAT-APPL-6-638 428 Available from NTIS: price code A02
Metaphit is the known trivial name for 1-(1-(3-isothiocyanatophenyl)cyclohexyl)pipe ridine. The following related compounds are included within the ambit of this invention and are designated together with the parent as 'Metaphit compounds.' Thiophit, = 1-(1-(2-(4-isothiocyanato)thienyl)cyclohexyl)-piperidine; and Ethylphit, = N-(1-(m-isothiocyanatophenyl)cyclohexyl)-ethylamine; and N-(1-(m-(a-bromoacetylamino)phenyl)-cyclohexyl)-ethylamine; and Isopropylphit = N-(1-(m-isothiocyanatophenyl)cyclohexyl)-isopropylamine. The compounds are utilized principally to block receptors of phencyclidine and related compounds such as ketamine, thus antagonizing the in vivo effects of phencyclidine, ketamine and other ligands which exert their pharmacological effects by interaction with phencyclidine receptors.

0059 Method for Introducing Fluorine into an Aromatic Ring
K. O. Christe, C. J. Schack
Department of the Air Force, Washington, DC
Filed 20 Sep 83, patented 9 Oct 84 6p
PATENT-4 476 337 Available from Comm. of Patents
The present invention concerns itself with a method for introducing fluorine into an aromatic ring structure by using NF4BF4 as a reaction reagent. The introduction is accomplished by an electrophilic substitution reaction in which up to five hydrogen atoms in the aromatic ring can be substituted by fluorine atoms. The reaction can be carried out by either adding the aromatic compound, such as benzene in vapor form, to a cooled solution of NF4BF4 in HF or, alternatively, by adding slowly a solution of NF4BF4 to a solution of benezene in HF.

0060 Method for Making Heterocyclic Block Copolymers
T. T. Tsai
Department of the Air Force, Washington, DC
Filed 16 May 84 13p
PAT-APPL-6-610 912 Available from NTIS: price code A02
Thermally stable aromatic heterocyclic block copolymers are prepared by reacting a diamino monomer and terephthalic acid to form a carboxy-terminated rigid rod segment and then polymerizing a carboxy-monoamine monomer therewith to form flexible segments grafted onto the rigid rod segments.

Method for Synthesizing Indium Phosphide
See 1091

Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889

0061 Method of Preparing Tetrahydrofuran
K. L. Wagaman
Department of the Navy, Washington, DC
Filed 26 Jun 85 7p
PAT-APPL-6-748 871 Available from NTIS: price code A02

This invention relates generally to organic synthesis and more particularly to the synthesis of cyclic ethers. An object of this invention is to provide a new method of synthesizing tetrahydrofuran. Another object of this invention is to provide an inexpensive method of preparing tetrahydrofuran. A further object of this invention is to provide a simpler, quicker method of preparing tetrahydrofuran. Yet another object of this invention is to prepare tetrahydrofuran by a method involving fewer side reactions. These and other objects of this invention are accomplished by heating 1,4-butanediol in the presence of a trivalent metal sulfate which is aluminum sulfate, ferric sulfate, chromic sulfate, or mixtures thereof to a temperature of from 130 C to 230 C.

0062 Method of Synthesizing Polymers from a Solid Electrolyte
T. A. Skotheim
Department of Energy, Washington, DC
Filed 19 Oct 84 18p
PAT-APPL-6-662 657 Available from NTIS: price code A02
A method of synthesizing electrically conductive polymers from a solvent-free solid polymer electrolyte is disclosed. An assembly of a substrate having an electrode thereon, a thin coating of solid electrolyte including a solution of PEO complexed with an alkali salt, and a thin transparent noble metal electrode are disposed in an evacuated chamber into which a selected monomer vapor is introduced while an electric potential is applied across the solid electrolyte to hold the thin transparent electrode at a positive potential relative to the electrode on the substrate, whereby a highly conductive polymer film is grown on the transparent electrode between it and the solid electrolyte.

Mild-Cure Formaldehyde-Free Durable-Press Finishing of Cotton Textiles with Glyoxal and Glycols
See 0791

0063 New Antineoplastic Platinum (IV) Complexes
R. Haugwitz
Department of Health and Human Services, Washington, DC
Filed 3 Mar 84 45p
PAT-APPL-6-585 111 Available from NTIS: price code A03
The present invention is directed to novel platinum (IV) complexes having antitumor or antineoplastic activity. More particularly, the present invention relates to substantially isomerically pure tetrahalo preferably tetrachloro (1,2-diaminocyclonexane) platinum (IV) compounds and their use as efgective antitumor agents.

0064 Pentafluorotelluriumoxide Fluorocarbons
C. J. Schack, K. O. Christe
Department of the Air Force, Washington, DC
Filed 24 Mar 83, patented 2 Apr 85 5p
PATENT-4 508 662 Available from Comm. of Patents
Pentafluorotellurium hypofluorite and pentafluorotellurilum hypochlorite have been reacted with olefinic reactants to form fluorocarbon adducts containing the oxypentafluorotellurium group (TeF50).

0065 Pharmacologically Active Amine Boranes
B. F. Spielvogel, A. T. McPhail, I. H. Hall
Department of the Army, Washington, DC
Filed 17 Jul 81, patented 11 Jan 83 8p
PATENT-4 368 194 Available from Comm. of Patents
The use of amine boranes to inhibit the inflammation process is disclosed. These boranes, which are boron analogs of alpha-amino acids, effectively block the following: general inflammation, induced arthritis, and the writhing reflex associated with inflammation pain. The inflammation associated with pleurisy is also inhibited. The boron analogs are shown in vitro to inhibit the relase of lysosomal enzymes from liver and polymophonuclear neutrophils (PMNs). Further, prostaglandin synthesis is blocked by these compounds at a low concentration, viz., .000001 M. Liver oxidative phosphorylation processes are also uncoupled by these compounds, but PMB migration is unaltered at .0001 M. The elevation of cyclic adenosine monophosphate in PMNs correlates positively with in vivo antiarthritic activity. Studies in rodents demonstrate that these boron analogs may be used at safe therapeutic doses. Several compounds per se are included within the scope of the invention.

0066 Phenoxy Resins Containing Pendent Ethynyl Groups and Cured Resins Obtained Therefrom
P. M. Hergenrother
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 10 May 84, patented 9 Apr 85 8p
PATENT-4 510 296 Available from Comm. of Patents
Phenoxy resins containing pendent ethynyl groups, the process for preparing the same, and the cured resin products obtained therefrom are disclosed. Upon the application of heat, the ethynyl groups react to provide branching and crosslinking with the cure temperature being lowered by using a catalyst if desired but not required. The cured phenoxy resins containing pendent ethynyl groups have improved solvent resistance and higher use temperature than linear uncrosslinked phenoxy resins and are applicable for use as coatings, films, adhesives, composited matrices, and molding compounds.

0067 Phosphorus-Containing Imide Resins
I. K. Varma, G. M. Fohlen, J. A. Parker
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 9 Jun 83, patented 29 Jan 85 7p
PATENT-4 496 701 Available from Comm. of Patents
Cured polymers of bis and tris-imides derived from tris(m-aminophenyl) phosphine oxides by reaction with maleic anhydride or its derivatives, and addition polymers of such imides, including a variant in which a monoimide is condensed with a dianhydride and the product is treated with a further quantity of maleic anhydride prior to curing are disclosed and claimed. Such polymers are flame resistant. Also disclosed are an improved method of producing tris(m-aminophenyl) phosphine oxides from the nitro analogues by reduction with hydrazine hydrate using palladized charcoal or Raney nickel as the catalyst and fiber reinforced cured resin composites.

0068 Phthalocyanine Polymers
B. N. Achar, G. M. Fohlen, J. A. Parker
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 10 Nov 82, patented 12 Feb 85 14p
PATENT-4 499 260 Available from Comm. of Patents
A method of forming 4,4',4'',4''' -tetraamino phthalocyanines involves reducing 4,4',4'',4''' -tetranitro phthalocyanines, polymerizing the metal tetraamino phthalocyanines with a tetracarboxylic dianhydride (preferably aromatic) or copolymerizing with a tetracarboxylic dianhydride and a diamine (preferably also aromatic) to produce amic acids which are then dehydrocyclized to imides. Thermally and

oxidatively stable polymers result which form tough, flexible films, varnishes, adhesives, and fibers.

0069 Plasticizer System for Propellant Compositions
W. D. Stephens, B. K. Rodman
Department of the Air Force, Washington, DC
Filed 23 May 83, patented 13 Nov 84 3p
PATENT-4 482 408 Available from Comm. of Patents
In accordance with this invention, there is provided a novel compound which acts effectively as a plasticizer for propellant compositions without the attendant problems of plasticizer migration which occur during propellant storage. The plasticizer of this invention is a carbamic acid ester. The primary object of this invention is to provide a novel carbamic acid ester having a particular molecular structure. Another object of this invention is to provide a novel solid propellant composition that produces only minimum amounts of plasticizer migration during its shelf-life. Still another objective if this invention is to provide a novel carbamic acid ester that finds particular utility as an internal plasticizer for solid propellant compositions.

0070 Plasticizer System for Propellant Compositions
W. D. Stephens, L. E. Jones
Department of the Air Force, Washington, DC
Filed 23 May 83, patented 13 Nov 84 4p
PATENT-4 482 410 Available from Comm. of Patents
In accordance with this invention, there is provided a family of novel compound which act effectively as plasticizers for propellant compositions without the attendant problems of plasticizer migration which often arise during propellant storage. The plasticizer of this invention are polyethers. The primary object of this invention is to provide a novel family of polyether plasticizers having a particular molecular structure. Another object of this invention is to provide a novel solid propellant composition that produces only minimum amounts of plasticizer migration during its shelf-life. Still another object of this invention is to provide a novel family of pivalate ether plasticizers that find particular utility as internal plasticizers for solid propellant compositions.

0071 Polyaromatic Ether-Sulfone-Keytones with Fluoro-Substituted-P-Cyclophane Units as Cross-Linking Sites
C. S. Marvel, S. Lin
Department of the Air Force, Washington, DC
Filed 30 May 84, patented 19 Feb 85 5p
PATENT-4 499 258 Available from Comm. of Patents
Polyaromatic ether-sulfone-ketones containing fluoro-substituted-p-cyclophane units were prepared from isophthaloyl chloride, terephthaloyl chloride, diphenyl ether, diphenoxydiphenyl sulfone and a small amount of ether 1,1,2,2,9,9,10,10-octafluoro(2,2)-p-cyclophane (type B) or pseudo-p-1,1,2,2,9,9,10,10-octofluoro(2,2)-p-cyclophane bisacid chloride (type A) by a Friedal-Crafts type polymerization procedure. The p-cyclo-phane units were incorporated as cross-linking sites.

0072 Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxbenzenes in Insect Population Control
L. Jurd
Department of Agriculture, Washington, DC
Filed 20 Apr 82, patented 13 Nov 84 13p
PATENT-4 482 728 Available from Comm. of Patents
Certain polybutylbenzylphenols and benzyl-3,4-methylenedioxybenzenes are useful for insect control especially as insect chemosterilants and oviposition inhibitors. The benzyl-3,4-methylenedioxybenzenes also find utility as growth inhibitors for mosquito larvae.

Polysilane Positive Photoresist Materials and Methods for Their Use
See 0830

0073 Preparation of Ethylenediamine Dinitrate
K. Lee
Department of Energy, Washington, DC
Filed 17 May 84 10p
PAT-APPL-6-611 558 Available from NTIS: price code A02
Method for the preparation of ethylenediamine dinitrate. Ethylenediamine dinitrate, a useful explosive, may readily be prepared by solvent extraction of nitrate ion from an acidic aqueous solution thereof using a high-molecular-weight, water-insoluble amine dissolved in an organic solvent, and reacting the resulting oraganic solution with ethylenediamine. The process of the instant invention avoids the use of concentrated nitric acid, as is currently practiced, resulting in a synthesis which is far less hazardous, especially for large quantities of the explosive, and more efficient.

0074 Preparation of Polymers of Functionalized Acetylenes
T. J. Katz, T. H. Ho
Department of the Navy, Washington, DC
Filed 4 Jan 84 17p
PAT-APPL-6-567 992 Available from NTIS: price code A02
Polymers of acetylenes containing functional groups not attached to the triple bond thereof have been prepared by combining the acetylene with either of two reagents. Novel features of the invention include the preparation of polymers consisting of a carbon skelton of alternating single and double bonds with functional groups attached to this skeleton by one or more saturated carbon atoms; and new procedures for polymerizing acetylenes and particularly those containing functional groups.

0075 Preparation of Simple Nitronium Salts
R. A. DeMarco, M. J. Moran
Department of the Navy, Washington, DC
Filed 29 Jun 83, patented 26 Jun 84 4p
PATENT-4 456 583 Available from Comm. of Patents
It is an object of this invention to provide a new and novel process for the preparation of simple nitronium salts. Another object is to provide a single-step process for the preparation of simple nitronium salts. A further object of this invention is to provide a process for the preparation of simple nitronium salts which may be carried out in a glass vessel. Yet another object of this invention is to provide a single step process for the preparation of nitronium hexafluoresenate which may be carried out in a glass vessel. A still further object of this invention is to provide a process for the preparation of intercalants for covalent materials. These and other objects are achieved by reacting nitrogen dioxide, a simple nitronium salt former, and fluorine gas to yield a simple nitronium salt, Equimolar amounts of nitrogen dioxide and the simple nitronium salt former are condensed into a vessel. An at least stoichiometric amount of fluorine gas is admitted into the vessel and the vessel allowed to warm until a reaction occurs to form a simple nitronium salt. The nitronium salt is then separated.

0076 Process for Preparation of Crosslinked Poly(tri-n-butyltin) Methacrylate with Simultaneous Particle Size Reduction
D. G. Glasgow, J. I. Satanek
Department of the Navy, Washington, DC
Filed 14 May 84 11p
PAT-APPL-6-609 940 Available from NTIS: price code A02
Poly(tri-n-butyltin) methacrylate, an anti-fouling compound, is prepared by esterifying a cross-linked poly-methacrylic acid with tributyltin oxide in the presence of a poly solvent. The poly solvent, such as acetone, dioxane or methyl-ethyl ketone, causes particle size reduction due to hydraulic shattering. The in-reaction particle size reduction eliminates the need for mechanical post grinding in the current process.

Process for Preparing Solvent Resistant, Thermoplastic Aromatic Poly(Imidesulfone)
See 0832

Process to Impart Smooth-Dry and Flame Retardant Properties to Synthetic-Cellulosic Blended Fabrics
See 0792

Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0794

Processable and Stable Conductive Polymers
See 0833

0077 Propellant Plasticizer
W. D. Stephens, E. G. Nieder
Department of the Air Force, Washington, DC
Filed 3 May 83, patented 13 Nov 84 4p
PATENT-4 482 406 Available from Comm. of Patents
This invention pertains to a plasticizer for propellant compositions in 2-hydroxy-3-butoxypropyl oleate. The plasticizer can be incorporated into propellants which conventionally include a binder fuel component, oxidizer component, isocyanate curing agent as well as other conventional components as desired such as bonding agents, curing catalysts and ballistic modifiers. Specifically, a preferred propellant having the internal plasticizer therein includes ammonium perchlorate oxidizer, HTPB binder, aluminum powder fuel, isophorone diisocyanate curing agent, a bonding agent and a delayed quick-cure catalyst. The migration of the plasticizer is substantially reduced so as to extend the shelf-life of rocket motors having the plasticized propellant therein.

0078 Pseudo-P-1,2,2,9,9,10,10-Octo-Fluoro(2,2)-P-Cyclophane Bis-Acid Chloride
C. S. Marel
Department of the Air Force, Washington, DC
Filed 16 Nov 83, patented 9 Oct 84 5p
PATENT-4 476 062 Available from Comm. of Patents
Polyaromatic ether-sulfone-ketones containing fluoro-substituted-p-cyclophane units were prepared from isophthaloyl chloride, terephthaloyl chloride, diphenyl ether, diphenoxydiphenyl sulfone and a small amount of either 1,1,2,2,9,9,10,10-octafluoro(2,2)-p-cyclophane (type B) or pseudo-p-1,1,2,2,9,9,10,10-octofluoro(2,2)-p-cyclophane bis-acid chloride (type A) by a Friedel-Crafts type polymerization procedure. The p-cyclophane units were incorporated as cross-linking sites.

Purification of Uromodulin
See 0893

0079 Rapid Production of Ispropenyl Esters
S. Serota
Department of Agriculture, Washington, DC
Filed 29 Sep 82, patented 18 Dec 84 4p
PATENT-4 488 996 Available from Comm. of Patents
Isopropenyl esters are prepared rapidly by reacting for about ten minutes at about 120C and a pressure of about 400 pounds per square inch a fatty acid and propyne in the presence of loaded zeolite catalyst.

0080 Recovery of Alcohol from a Fermentation Source by Separation Rather Than Distillation
D. C. Sayles
Department of the Army, Washington, DC
Filed 3 Jan 83, patented 2 Apr 85 5p
PATENT-4 508 929 Available from Comm. of Patents
Ethanol is recovered from fermentation products by a countercurrent extraction process which employs diethyl ether as the extraction process which employs diethyl ether as the extraction solvent to form a diethyl ether-ethanol mixture. The ethanol is salted out by adding calcium chloride to the mixture, and the diethyl ether layer is separated and recycled. The calcium chloride in ethanol solution is removed by adding sodium carbonate to form the solids calcium carbonate and sodium chloride which are removed by filtration. The ethanol is recovered as the filtrate.

0081 Recrystallization of Hexanitrostilbene from Dimethylsulfoxide and Methanol
E. G. Kayser
Department of the Navy, Washington, DC
1 Nov 83 7p
PAT-APPL-508 789 Available from NTIS: price code A02
This invention is to provide a new method of recrystallizing 2,2',4,4',6,6'-hexanitrostilbene-II. Another objective of this invention is to provide high purity finely divided 2,2',2,2',6,6'-hexanitrostilbene-II. Another objective os this invention is to provide the compound with a high degree of thermal stability. This invention provides the compound with a uniform particle size. Finally this invention provides 2,2',4,4',6,6'-hexanitrostilbene in a form which is suitable for use in detonation cords, flexible shape charges, and other flexible explosive devices in a high temperature environment.

Saponin-Based Polyether Polyols
See 0894

0082 Stabilized Unsaturated Polyesters
O. Vogl, E. Borsig
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 6 Jun 84, patented 11 Jun 85 8p
PATENT-4 523 008 Available from Comm. of Patents
An unsaturated polyester, such as propylene glycolmaleic acid phthalic acid prepolymer dissolved in styrene is interpolymerized with an ultraviolet absorber and/or an antioxidant. The unsaturated chain may be filled with H or lower alkyl such as methyl and tertiary alkyl such as tertiary butyl. A polymer stable to exposure to the outdoors without degradation by ultraviolet radiation, thermal and/or photooxidation is formed.

0083 Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)

K. C. Rice, C. B. Pert, T. R. Burke, S. M. Larson, W. C. Eckelman
Department of Health and Human Services, Washington, DC

Filed 27 Nov 84 20p
PAT-APPL-6-675 276 Available from NTIS: price code A02

Fluorinated derivatives 3,14-dihydroxy-4,5 alpha-epoxy-6 beta-fluoro-17-methylmorphinan ('fluorooxymorphone'; FOXY, compound 10) and 17-cyclopropylmethyl-3,14-dihydroxy-4,5 alpha-epoxy-6 beta-fluoromorphinan (CYCLOFOXY, compound 18) are prepared based upon the structures of the potent opioid agonist oxymorphone 4 and the antagonist naltrexone 11, respectively. Fluorine was introduced in the final stages of synthesis by a facile nucleophilic displacement with fluoride ion of the 6 alpha-triflate functions in 8 and 16. The synthetic procedures were suitable for the production of the corresponding position emitting (18)F-labeled analogs (18)F-FOXY and (18)F-CYCLOFOXY, which are useful for in vivo studies of the opioid receptor system using positron emission transaxial tomography. In addition, the tritiation of FOXY to high specific activity is noted.

0084 Synthesis of Arylene Siloxanylene Polymers and Copolymers

H. Rosenberg, T. T. Tsai
Department of the Air Force, Washington, DC

Filed 27 Jan 82, patented 21 May 85 11p
PATENT-4 518 759 Available from Comm. of Patents

This invention is directed to the preparation of certain arylene bis-silanols in highly purified form and to the preparation of five new arylene bis-silanols in particular, along with a procedure for ploymerizing these and other arylene-type bis-silanols using phosgene as a polymerization promotor or catalyst, to obtain highly purified, high molecular weight arylenesiloxanylene polymers. Preferred polymers are those which, when laminated to polycarbonate sheets or glass maintain their transparency, stability and adherence to said substrates at temperatures of up to and including 400 F. Such polymers are useful for the formulation of high temperature interlayers for windshields and canopies for aircraft and related aerospace vehicles.

0085 Synthesis of Geminal Dinitro Compounds

V. Grakauskas
Department of the Air Force, Washington, DC

Filed 31 Jan 85 19p
PAT-APPL-6-696 680 Available from NTIS: price code A02

In accordance with the present invention there is provided a process for producing geminal dinitro compounds which comprises reacting a nitrite salt selected from the group consisting of alkali metal nitrites and alkaline earth metal nitrites with the metal salt of an organic nitro compound in the presence of an oxidizing agent and a catalytic amount of an alkali metal ferricyanide. There is also provided a process for producing geminal dinitro compounds which comprises reacting a nitrite salt, as described above, with the metal salt of a cyclic organic nitro compound in the presence of an oxidizing agent and a catalytic amount of an alkali metal ferricycanide. This document is a patent application.

0086 Synthesis of 2,4,8,10-Tetroxaspiro5,5undecane

A. C. Poshkus
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center

Filed 3 Sep 80, patented 9 Jul 85 5p
PATENT-4 528 386 Available from Comm. of Patents

Pentaerythritol is converted to its diformal, 2,4,8,10-tetroxaspirol5.5undecane, by heating it to a temperature within the range of about 110 to 150 C, for a period of up to 10 minutes, in the presence of a slight excess of paraformaldehyde and of a catalytic quantity of an acid catalyst such as sulfuric acid. The reaction may be carried out in two steps, by forming first the monoformal, then the diformal. In any case, total reaction time is about 10 minutes, and yield of diformal are greater than 90%. Previous processes require hours or days, and often, tedious operating procedures.

0087 Synthetic Peptides for the Production of Specific Keratin Proteins

S. H. Yuspa, D. R. Roop, P. M. Steinert
Department of Health and Human Services, Washington, DC

Filed 25 Sep 84 15p
PAT-APPL-6-654 213 Available from NTIS: price code A02

A process is disclosed for the construction of synthetic peptides corresponding to amino acid sequences of 55-, 59-, 60-, 67-kilodalton keratin proteins. These synthetic peptides make possible the development of monospecific antisera for individual keratin proteins. The process involves preparing cDNA libraries and reducing the amino sequences of cDNA clones.

0088 Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites

P. L. Guss, III, J. H. Tumlinson, P. E. Sonnet, J. R. McLaughlin
Department of Agriculture, Washington, DC

Filed 27 Jan 83, patented 2 Oct 84 5p
PATENT-4 474 991 Available from Comm. of Patents

A pheromonal compound produced by the southern corn rootworm has been identified as 10-methyl-2-tridecanone (10-M-2-T). The synthetic R-enantiomer of 10-M-2-T demonstrates activity toward the southern corn rootworm comparable to its natural counterpart, whereas the synthetic racemic mixture is characterized by approximately half the activity for a given amount. Related diabroticites such as the western spotted cucumber beetle also respond to the synthetic compounds. By attracting adult beetles to field traps, 10-M-2-T is a useful tool for the monitoring and control of these major agricultural pests.

0089 Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils

W. E. Burkholder, J. K. Phillips, C. A. Walgenbach, J. A. Klein
Department of Agriculture, Washington, DC

Filed 27 Mar 85 19p
PAT-APPL-6-716 798 Available from NTIS: price code A02

The continued search for alternatives to the widespread use of insecticides has led to the investigation of pheromones as potential agents for integrated pest management. A number of economically important insects are currently monitored, partially controlled, or completely suppressed by use of their own species-specific pheromones. The previous unavailability of Sitophilus pheromones has precluded

application of this technology for the control of grain weevils.

0090 Thermosetting Arylether Compounds and Their Synthesis
B. A. Reinhardt
Department of the Air Force, Washington, DC
Filed 25 Jul 84 14p
PAT-APPL-6-634 346 Available from NTIS: price code A02
Arylether compounds containing terminal phenylethynyl groups are provided. Also provided is a process for producing these compounds.

2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
See 0896

COMMUNICATIONS

0091 ADCCP (Advanced Data Communication Control Procedure) Communication Processor
L. D. Kesler
Department of the Air Force, Washington, DC
Filed 6 Feb 85 13p
PAT-APPL-6-698 725 Available from NTIS: price code A02
In this patent application, an ADCCP communication processor apparatus operates on-line between the PARCS data transmission controller (DTC) and the NORAD Cheyenne Mountain complex. The ADCCP communuication processor apparatus accepts AUTODIN Mode 1, 80 chracter block by block aerial transmission from PARCS DTC (channels 2 and 3), reformats the messages into an ADCCP frame structure, and multiplexes and interleaves the transmission to the NCMC computer on a prime data link.

Apparatus and Circuits for Two-Color Printing in Electronic Impact Printers
See 0976

0092 Balanced System for Ranging and Synchronization between Satellite Pairs
J. W. Schwartz
Department of the Navy, Washington, DC
Filed 24 Nov 82, patented 15 Jan 85 13p
PATENT-4 494 211 Available from Comm. of Patents
A balanced ranging and synchronization (R&S) system is described for a master(M)-slave(S) satellite pair including a clock, a transmitter, a receiver, a time difference measuring device and a calculating device on both M and S. Each satellite transmits timing signals synchronized to its clock, receives the timing signals from the other satellite and measures the time difference between the transmission and the reception of the timing signals. The time difference measured on each satellite is then transmitted to the other satellite. The calculating device on each satellite utilizes these time difference measurements to calculate the asynchronism between the clocks and the range between the satellites. Finally the S clock is adjusted so that the asynchronism is reduced to within predetermined limits.

0093 Coherent Receiver Phase and Amplitude Alignment Circuit
J. P. Hansen
Department of the Navy, Washington, DC
Filed 13 Nov 84 23p
PAT-APPL-6-670 082 Available from NTIS: price code A02
A device for aligning the phase and amplitude of a quadrature-detected coherent two-channel receiver utilizing a mixer in each channel comprising a circuit for providing a sweep frequency signal to each receiver channel; a circuit for detecting the envelopes of the receiver channels at the outputs of the mixers and determining the voltage difference between the envelopes; and a circuit for controlling the amplitude level in one of the receiver channels in accordance with this voltage difference. Simultaneously, the output signals from the two mixers are added with the resulting sum signal being envelope-detected, and also subtracted from each other with the resulting difference signal being envelope-detected. The sum envelope and the difference envelope are subtracted from each other to generate a control signal for controlling the phase of one of the mixer local oscillator signals to ensure that the mixer local oscillator signals are in phase quadrature.

0094 Communications Network Status Information System
H. A. Stover
Department of the Army, Washington, DC
Filed 17 Oct 83, patented 30 Jul 85 16p
PATENT-4 532 625 Available from Comm. of Patents
This disclosure concerns a communications network information system, and provides apparatus and a method for efficiently providing survivable communications capability to every surviving node in the communications network from every other surviving node. The types of information provided can include high priority message between users of the communications system, or perhaps of even greater importance, very frequently updated status information about the communications network nodes and their interconnecting links for use in optimally utilizing the surviving resources of a heavily damaged network. With this capability every surviving node in the network will be automatically and efficiently provided with the status of every node and interconnecting link.

Computer-Aided Process for Generating Camera-Ready Graphical Artwork
See 0121

Control for Dot Matrix Printers Operating in Harsh Environment
See 0122

Detection of Angular Modulated Electromagnetic Signals
See 0191

0095 Digital Raster Timing Encoder/Decoder
E. W. Gennetten, D. A. Gomez
Department of the Navy, Washington, DC
Filed 6 Jun 84 28p
PAT-APPL-6-617 220 Available from NTIS: price code A03
The invention presents a digital raster timing encoder/decoder system wherein television raster synchronization pulses and other timing pulses and information data are generated. The invention comprises a digital clock source having coding means which combined with the clock source encodes preselected digital signals containing information on raster synchronization control and timing, and also any other information data that is desired. The encoded signal output is transmitted either directly or via some special transmission link, for example by use of a Manchester Decoder clock multiplier system, to a receiving and decoding means. The received signal is decoded to

create timing signals for operation control of the video television scanning system, and to read out other desired digital data that has been also transmitted within the signal. The system takes advantage of the fact that control signals of conventional synchronization pulses contain large deadband areas within which additional data information may be placed. Such additional digital information may be used to add other control pulse capability, or to add information transmission capability. A principle feature of the system is that only a single channel is needed to transmit synchronization pulses and any additional timing pulses or information of interest.

Dot Matrix Color Printer
See 0977

0096 Double Reference Pulsed Phase Locked Loop (Drp-2L-2)
J. S. Heyman
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 7 Mar 85 10p
PAT-APPL-6-709 257 Available from NTIS: price code A02
A double reference pulse phase locked loop is described which measures the phase shift between tone burst signals initially derived from the same periodic signal source (voltage controlled oscillator) and delayed by different amounts because of two different paths. A first path is from the transducer to the surface of a sample and back, and a second path is from the transducer to the opposite surface and back. A first pulse phase locked loop including a phase detector and a phase shifter forces the tone burst signals delayed by the second path in phase quadrature with the periodic signal source. A second pulse phase locked loop including a second phase detector forces the tone burst signals delayed by the first path into phase quadrature with the phase shifted periodic signal source.

0097 Dual Optical Mechanical Position Tracker
S. L. Everett
Department of the Army, Washington, DC
Filed 6 Jun 85 19p
PAT-APPL-6-742 152 Available from NTIS: price code A02
This patent application describes an apparatus for retaining control of moving carriage impact dot matrix print heads when subjected to strong external forces such as shock and/or vibration. Position and direction of carriage movement is provided by a photo emitter-sensor assembly and a slotted timing wheel or disc having a plurality of equally spaced slots whose slot width is equal to the slot separation. The slot width is sufficient to frame a pair of side-by-side emitters which operate in conjunction with a pair of side-by-side sensors on the other side of the timing wheel. The order or sequence in which the sensors receive photo energy from their respective emitters indicates the direction of rotation of the timing wheel while simultaneous reception of photo energy by the side-by-side sensors provides an indication of valid rest position of the carriage drive motor.

0098 Hardward Interpreter for Finite State Automata
L. J. Silverthorn
Department of Commerce, Washington, DC
Filed 9 May 85 79p
PAT-APPL-6-732 327 Available from NTIS: price code A05
The invention relates to devices which automatically monitor electronic transactions, and more specifically relates to an electronic system for monitoring transactions on a high speed interface bus.

Holographic Directional Coupler for Fiber Optic Systems
See 1046

0099 Interactive Communication Channel
R. H. G. Chan
Department of the Air Force, Washington, DC
Filed 27 Dec 84 69p
PAT-APPL-6-686 954 Available from NTIS: price code A04
An interactive communication channel (ICC) provides a digital computer with high performance multi-channel interfaces. Sixteen full duplex channels can be serviced in the ICC with sequence or scan pattern being programmed and dependent upon the channels and their speed. A channel buffer system is used for line interface, and character exchange. The channel buffersystem is on a byte basis. The ICC performs frame start and frame end functions, bit stripping and bit stuffing. Data is stored in a memory in block format (256 bytes maximum) by a program control and the ICC maintains byte address information and a block byte count. Data exchange with the memory is made by cycle steals. Error detection is also provided for using a cyclic redundancy check technique.

0100 LDV(Lase Doppler Velocimeter) Multiplexer Interface
D. R. Harrison, J. L. Brown
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 22 Apr 85 46p
PAT-APPL-6-725 714 Available from NTIS: price code A03
A laser Doppler velocimeter multiplexer interface includes an event pulse synchronizer which synchronizes data pulses from events A, B and C. Clock control is connected to receive timing information on the data pulses from the synchronizer. Displays are connected to receive clock signals from the clock control for indicating a data rate for each of the measured events A, B and C. The display is connected to receive clock signals from the clock control to indicate a coincidence rate between data pulses for any selected combination of the measured events A, B and C. A multiplexer receives the data pulses from the events A, B and C and rate data from the clock control. The multiplexer has output for supplying the data pulses and rate data to a single input of a data processing system. A multiplexer control is connected to supply control signals to the multiplexer for selecting the event data pulses and the rate data for output from the multiplexer.

0101 Low Voltage Two Wire to Four Wire Telephone Circuit Converter Apparatus
D. Pacini
Department of the Air Force, Washington, DC
Filed 8 Mar 83 14p
PAT-APPL-6-473 384 Available from NTIS: price code A02
This abstract describes a low voltage two wire to four wire telephone circuit converter apparatus utilizing a series pair of amplifiers to provide a transmit data out signal that is referenced to analog ground. A pair of amplifiers is in parallel to receive data in single which is referenced to analog ground and apply it to the telephone unit. A signal adapter converts the telephone ring signal to a constant one level for transmission over a digital channel in a fiber optic link.

Metallized Synthetic Cable
See 0372

0102 Method and Apparatus for Operating on Companded PCM (Pulse Code Modulation) Voice Data
F. Byrne
National Aeronautics and Space Administration, Cocoa Beach, FL. John F. Kennedy Space Center
Filed 28 Sep 84 15p
PAT-APPL-6-655 601 Available from NTIS: price code A02
A method and apparatus for digitizing audio signals being generated from plurality of parties in order to provide audio communication between the parties with a minimum of interference. Audio signals are converted to a pulse code modulator companded signal for transmitting to a remote location and then converting each of the companded signals to a first eight parallel signal. Each of the eight bit parallel signals from the individual parties are fed to a read-only memory (ROM) causing the ROM to produce an eight bit signal on the output representing the instantaneous sum of the eight bit parallel signals being supplied to the imputs thereof. The eight bit parallel signal appearing on the output of the ROM is converted to a serial digital by a parallel to serial converter (50) for transmitting over a single line (52) to another serial to parallel coverter (54) prior to being fed through a digital to analog converter to the receiver (58) for producing the audio signal at the receiver.

Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
See 0585

Multi-Track Optical Shaft Position and Timing Cylinder
See 0979

0103 Multicomputer Communication System
A. K. Agrawal, P. G. Mullen, V. V. Vadakan
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 3 Apr 81, patented 8 Jan 85 17p
PATENT-4 493 021 Available from Comm. of Patents
A local area network is provided for a plurality of autonomous computers which operate at different rates and under different protocols coupled by network bus adapters to a global bus. A host computer (HC) divides a message file to be transmitted into blocks, each with a header that includes a data type identifier and a trailer. The associated network bus adapter (NBA) then divides the data into packets, each with a header to which a transport header and trailer is added with frame type code which specifies one of three modes of addressing in the transmission of data, namely a physical address mode for computer to computer transmission using two bytes for source and destination addresses, a logical address mode and a data type mode. In the logical address mode, one of the two addressing bytes contains a logical channel number (LCN) established between the transmit ting and one or more receiving computers. In the data type mode, one of the addressing bytes contains a code identifying the type of data.

0104 Optical Analog Data Link with Simple Self-Test Feature
R. L. Witkover
Department of Energy, Washington, DC
Filed 1 Feb 84 20p
PAT-APPL-6-575 732 Available from NTIS: price code A02
A communications circuit for optically transmitting analog data signals free of excessive ripple, while having rapid response time. The invention is further characterized by being adapted to provide an immediate indication of the failure of the optical transmission link of the circuit. Commerically available voltage to frequency converter chips are used in conjunction with suitable wiring arrays and in combination with readily available indicator means for constructing the communication circuit of the invention. A V/F converter in the communications circuit is coupled to an offset adjustment means to cause the converter to continuously produce a string of output voltage pulses having a frequency of about 1Khz responsive to the input analog signal to the converter being zero. The continuous presence of the 1Khz frequency on the optical transmission link is monitored at the receiving end of the communication circuit and the indicator means is connected to immediately provide an easily detected indication of a failure of the optical transmission link to transmit the 1Khz frequency pulses.

0105 Optical Non-Line-of-Sight Covert, Secure High Data Communication System
M. Geller, T. E. Keenan, D. E. Altman, R. H. Patterson
Department of the Navy, Washington, DC
Filed 2 May 83, patented 8 Jan 85 7p
PATENT-4 493 114 Available from Comm. of Patents
An omnidirectional non-line-of-sight communication capability is assured by transmission and reception in the solar blind ultraviolet spectrum. An omnidirectional ultraviolet source generates a UV carrier in the tens of watts power range. This is modulated and received by having a sensitivity to respond to scattered UV modulated energy. Pulse modulating the ultraviolet spectrum signal and providing appropriate logic circuitry associated with the wide field-of-view receiver reduces the values of bit error rate.

Optically Controlled Multi-Color Impact Printer
See 0981

Positioning of a Multicolor Ribbon
See 0984

Printing Apparatus
See 0985

0106 Pulse Compression System
B. L. Lewis
Department of the Navy, Washington, DC
Filed 24 Apr 80, patented 4 Jun 85 14p
PATENT-4 521 779 Available from Comm. of Patents
This patent describes a system for polyphase encoding transmitted pulses of energy and for decoding the received signals to enhance returns from the range interval being examined during a particular processing period and attenuate returns from contiguous range intervals (pulse compression). The system includes a decoding device which comprises a delay circuit having N distributed outputs including its input for producing a uniform delay between adjacent outputs corresponding to N inputted elements of received phase-coded signal of length N squared; a conjugator circuit coupled to the first N/2 successive outputs of the delay circuit; a first signal-combining circuit coupled to the conjugator circuit and to the last N/2 successive outputs of the delay circuit; a multiplier circuit coupled to the first signal-combining circuit; and a second signal-combining circuit coupled to the multiplier circuit. The decoding device provides a decoding phase shift to the signal elements of the phase-coded signal.

Pulsed Digital Multiplexed Laser Generator
See 1019

0107 Reed-Solomon Decoder
C. R. Lahmeyer
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 21 Nov 84 35p
PAT-APPL-6-673 685 Available from NTIS: price code A03
A Reed-Solomon decoder with dedicated hardware for five sequential algorithms was designed with overall pipelining by memory swapping between input, processing and output memories, and internal pipelining through the five algorithms. The code definition used in decoding is specified by a keyword received with each block of data so that a number of different code formats may be decoded by the same hardware.

Sampled Towed Array Telemetry
See 0165

0108 Secure Digital Speech Communication
G. Benke
Department of the Air Force, Washington, DC
Filed 26 Jun 84 78p
PAT-APPL-6-624 567 Available from NTIS: price code A05
This invention relates to a secure digital speech communication system, and more particularly to waveform coding with digital samples. A novel form of waveform coding is used, designed a Critical Point Coder (CPC). It operates by transmitting only those points in a waveform which are significant for defining its overall structure. The receiver reconstructs the missing points in the waveform using some sort of approximating interpolation. The CPC uses a new approach to waveform coding. Rather than transmitting information about each sample as other waveform coders, the CPC transmits information for only samples deemed critical to high quality reconstruction. The four major functions performed by the CPC are (1) detecting which samples are critical, called critical points: (2) quantizing the vectors which are formed between successive critical points: (3) dealing with the non-uniform bit rate since critical points do not occur regularly: and (4) reconstructing the waveform between the endpoints of the quantized vectors. Additional keywords: Voice Communications, microprocessors, robustness, algorithms.

Serial Impact Printer for Multicolor Printing
See 0986

0109 Simultaneous Detection of Time Coincident Signals in an Adaptive Doppler Tracker
A. W. Roeder
Department of the Air Force, Washington, DC
Filed 3 Dec 81, patented 23 Apr 85 12p
PATENT-4 513 428 Available from Comm. of Patents
The performance of an adaptive digital doppler tracker having a sample data phase locked loop is improved by a circuit that detects and demodulates interfering signals. The tracker has a coherence sensor that provides signals indicating coherence and non-coherence conditions. An amplitude sensor generates a strong signal when interfering (time coincident) signals are received. The tracker includes both a coherent data detector and SSB processor. An interference detector receives the outputs of the coherence sensor and the amplitude sensor and generates and SSB enable signal in response to the coincidence of a strong sigal and a non-coherent condition signal. The SSB enables the SSB processor which detects both interfering signals.

0110 Single Optical Fiber Telephone System
N. W. Feldman
Department of the Army, Washington, DC
Filed 6 Sep 84 27p
PAT-APPL-6-647 767 Available from NTIS: price code A03
A hybrid telephone system comprising a plurality of optical telephones and a plurality of electrical telephones all connected to a conventional central office. The optical telephones are all provided with opto-electrical interface units co-located with the central office, for converting optical signals received from the optical telephones to electrical telephone signals, and for converting electrical telephone signals from said central office to optical signals for transmission to the optical telephones. The optical telephones are connected to the interface units by means of a single optical fiber which carries both directions of traffic as well as supervisory signals at one of two wavelengths. The optical telephone include means for separating these two wavelengths as well as opto-acoustic and acousto-optic converters.

0111 Survivable Local Area Network
J. L. Katz
Department of the Army, Washington, DC
Filed 14 May 84 23p
PAT-APPL-6-610 148 Available from NTIS: price code A02
Enhanced availability and survivability of communications between geographically remote locations with a minimum of redundancy of transmission facilities and media is provided by a survivable bus network capable of providing continued interprocessor or other communications in the event of multiple bus outages. It consists of multiple busses, bus isolation device (BIDs) and two types of network interface processors (NIPs). The BIDs electrically isolate bus segments on either side of a connection so that if a fault occurs only the segment containing the fault will be affected. The first type of NIP connects to one bus and performs the usual function of providing an electrical and software interface between the network and one or more subscriber processors. The second type is a bridge which performs these same functions but connects to two busses and has the capability to transfer traffic as it appears on either bus to the other. The network provides increased survivability in the event of failed segments but does not entail the expense of a fully redundant system.

0112 Synchronization Tracking in Pulse Position Modulation Receiver
V. A. Vilnrotter
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 7 Aug 84 14p
PAT-APPL-6-638 586 Available from NTIS: price code A02
A clock pulse generator for decoding pulse position modulation in an optical communication receiver is synchronized by a delay tracking loop which multiplies impulses of a data pulse by the square wave clock pulses from the generator to produce positive impulses when the clock pulse is of one level, and negative impulses when the clock pulse is of another level. A delay tracking loop integrates the impulses and produces an error signal that adjusts the delay so the clock pulses will be synchronized with data pulses. A dead time tau(d) provided between data pulses of an interval tau(p) in the data pulse period tau. When synchronized, the

average number of positive impulses integrated will equal the average number of negative impluses over the continuous stream of data pulses.

0113 Television Camera Video Level Control System
M. Kravitz, L. A. Freedman, E. H. Fredd, D. E. Denef
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 9 Apr 82, patented 22 Jan 85 8p
PATENT-4 495 520 Available from Comm. of Patents
A video level control system is provided which generates a normalized video signal for a camera processing circuit. The video level control system includes a lens iris which provides a controlled light signal to a camera tube. The camera tube converts the light signal provided by the lens iris into electrical signals. A feedback circuit in response to the electrical signals generated by the camera tube, provides feedback signals to the lens iris and the camera tube. This assures that a normalized video signal is provided in a first illumination range. An automatic gain control loop, which is also responsive to the electrical signals generated by the camera tube 4, operates in tandem with the feedback circuit. This assures that the normalized video signal is maintained in a second illumination range.

0114 Three-Stage Binary Coincidence Detector Apparatus with Adaptive Constant False Alarm Rate
J. J. Justus
Department of the Air Force, Washington, DC
Filed 26 May 82, patented 11 Jun 85 4p
PATENT-4 523 325 Available from Comm. of Patents
A target processor utilizing a feedback loop to maintain a constant false alarm rate for variable level video input signals with noise or noise plus clutter on the imput signal. The processor includes three serially connected stages of binary coincidence detectors which comprise a threshold detector for processign video signals which exceed a threshcld level, an M of N detector for providing an alarm for each range having a count of M or greater pulses. and a P of Q detector for generating a target alarm after at least P or greater frequencies have been transmitted.

0115 Tone Calibrated Digital Radio Communication System
F. Davarian
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 2 May 85 23p
PAT-APPL-6-727 719 Available from NTIS: price code A02
A transmitter for digital radio communication creates a null by balanced encoding of data modulated on an RF carrier, and inserts a calibration tone within the null. It is accomplished by having the calibration tone coincide in phase and frequency with the transmitted radio frequency output, for coherent demodulation of data at the receiver where the tone calibration signal is extracted and used for multipath fading compensation.

Transceiver Test Device
See 0644

0116 Tropospheric Scatter Communication System Having Angle Diversity
P. D. Kaplan
Department of the Air Force, Washington, DC
Filed 10 Jan 84 11p
PAT-APPL-6-569 644 Available from NTIS: price code A02
A tropospheric scatter communication system provides diverse angle transmission paths which may be utilized alone or in conjunction with frequency and/or other known diversity system arrangements for improved performance. The diverse angle transmission paths are routed through sum and difference monopulse beams displaced in azimuth.

0117 Wavelength Multiplexer-Demultiplexer
S. K. Sheem
Department of the Navy, Washington, DC
Filed 23 Apr 80, patented 20 Nov 84 10p
PATENT-4 483 582 Available from Comm. of Patents
A multiwavelength multiplexer-demultiplexer constructed from units each capable of multiplexing or demultiplexing two wavelengths. As many such units as required can be interconnected to form multiplexer-demultiplexers of any number of wavelengths. Each two-wavelength multiplexer-demultiplexer unit includes a four-port power divider, a four-port phase shifter having two ports connected to two ports of the phase shifter. The power divider may be a single-mode optical fiber directional coupler, or a half-silvered mirror beam splitter, The phase shifter may include a pair of single mode optical fibers or a pair of oppositely disposed mirrors.

COMPUTERS

Adaptive Preprocessing System
See 0188

Advanced Cube Processor
See 1029

0118 Analog-to-Digital Converter
C. E. Konig, W. J. Skudera
Department of the Army, Washington, DC
Filed 16 Aug 85 21p
PAT-APPL-6-766 371 Available from NTIS: price code A02
An apparatus is disclosed which permits a high speed waveform, for example in the form of a series of analog data pulses, to be sampled and converted into a series of digital values. Each analog data pulse is applied in parallel to a multiplicity of A/D converters and to one or more level detectors. Each level detector provides a strobe when the voltage of the analog data pulse crosses a reference threshold. The strobes are applied to delay means whose outputs are a multiplying of delayed strobe pulses which have been delayed by predetermined amounts. Each of the multiplicity of A/D converters samples the analog data pulse in response to the particular delayed samples the analog data pulse in response to the particular delayed strobe applied thereto and provides a digital value of that sample. The largest of the digital values from each of the A/D converters is provided as the output of the apparatus for each analog data pulse.

0119 Arithmetic Pipeline for Image Processing
W. R. Steiner
Department of the Air Force, Washington, DC
Filed 6 Jun 85 77p
PAT-APPL-6-741 644 Available from NTIS: price code A05
The arithmetic pipeline processor (which is used for computer graphics such as a flight simulator) is a group of boards capable of solving an equation of a cetain form. It includes a digital logarithmic calculator using shifters and stored tables to perform arithmetic functions such as multi-

plication, division, squares, square roots, and fourth roots. It comprises two imput ports each capable of receiving digital data N bits wide. Included are a log transform unit, a log sum or difference unit and an antilog unit. Following these is an M-bit Arithmetic Logic Unit and circuitry for converting between fixed point and floating numbers. It uses piece wise linear approximation in conjunction with stored slope information in tables to do the transform calculation of logarithms and antilogarithms. The M-bit arithmetic unit performs accumulation of up to k ter ms. In a specific embodiment, N=32, M-36, and K=128. Note that a pipeline processor has no central processing unit or software in itself, but it may interface with a commputer for inputs and outputs including control information. Additional keywords: patent applications; floating point numbers.

0120 Automatic Multi-Banking of Memory for Microprocessors
G. A. Wiker
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 7 Aug 81, patented 6 Nov 84 10p
PATENT-4 481 570 Available from Comm. of Patents
A microprocessor system is provided with added memories to expand its address spaces beyond its address word length capacity by using indirect addressing instructions of a type having a detectable operations code and dedicating designated address spaces of memory to each of the added memories, one space to a memory. By decoding each operations code of instructions read from main memory into a decoder to identify indirect addressing instructions of the specified type, and then decoding the address that follows in a decoder to determine which added memory is associated therewith, the associated added memory is selectively enabled through a unit while the main memory is disabled to permit the instruction to be executed on the location to which the effective address of the indirect address instruction points, either before the indirect address is read from main memory or afterwards, depending on how the system is arranged by a switch.

Bipolar Digitizer Having Compression Capability
See 0239

0121 Computer-Aided Process for Generating Camera-Ready Graphical Artwork
M. J. Caddy
Department of the Navy, Washington, DC
Filed 1 Sep 83 47p
PAT-APPL-6-528 710 Available from NTIS: price code A03
A computer-aided process is disclosed for automatically generating a camera-ready hardcopy of a graphical plot upon command instructions imputted via a conventional storage tube graphics display terminal having an addressable cross-hair cursor and a keyboard. In accordance with an interactive graphics code or program, tabular data coordinates stored in computer file form are retrieved and plotted on appropriately titled and scaled axes with the plotted coordinates being interconnected along curves formed of a smooth or linear nature by interpolation. The graphical plot viewed on the display terminal is further enhanced by inclusion of labels, shaded areas, and reference symbols and characters prior to printing out the hardcopy of an associated hardcopy unit coupled to the display terminal.

0122 Control for Dot Matrix Printers Operating In Harsh Environment
S. L. Everett
Department of the Army, Washington, DC
Filed 6 Jun 85 115p
PAT-APPL-6-741 940 Available from NTIS: price code A06
A control processing method and apparatus for dot matrix printers which are subjected to relatively high levels of vibration and shock. Vibration and shock are detected and, in the event that a known safe vibration or shock level is exceeded, print line data being fed alternately to the print head from a pair of data print buffers coupled to the output of a logic data input buffer are inhibited while the input buffer temporarily stores the incoming data. Drive pulses applied to the stepper motor used to move the print head carriage are simultaneously stopped. When the detected level falls below a set threshold indicative of a safe operating level, normal operation is resumed with the print data again being fed from the input buffer to the print line buffers which are reactivated along with the carriage stepper motor. Additionally, any positional change of print head carriage during the existence of shock or vibration levels above the threshold value from the last valid driven position is determined and accordingly repositioned prior to continuing the printing operation upon cessation of the disturbance.

0123 Data Collection System
S. L. Stello
Department of the Navy, Washington, DC
Filed 9 Jul 84 9p
PAT-APPL-6-629 284 Available from NTIS: price code A02
The principal object of the present invention is to configure a data collection system to be modular in design so that the data collection interfaces can be built independently such that the data collection system can be customized quickly as needed without disturbing the in place operating components.

0124 Digital High Speed Programmable Convolver
T. C. Rearick
Department of the Army, Washington, DC
Filed 17 Dec 84 12p
PAT-APPL-6-682 126 Available from NTIS: price code A02
A circuit module for rapidly calculating a discrete numerical convolution is described. A convolution such as finding the sum of the products of a 16 bit constant and a 16 bit variable is performed by a module which is programmable so that the constant may be changed for a new problem. In addition, the module may be programmed to find the sum of the products of 4 and 8 bit constants and variables. RAM(Random Access Memories) are loaded with partial products of the selected constant and all possible variables. Then, when the actual variable is loaded, it acts as an address to find the correct partial product in the particular RAM. The partial products from all of the RAMs are shifted to the appropriate numerical power position (if necessary) and then added in adder elements.

0125 Dual Drain MOSFET Detector for Crosstie Memory Systems
N. Bluzer
Department of the Navy, Washington, DC
Filed 22 Mar 85 14p
PAT-APPL-6-714 775 Available from NTIS: price code A02
This patent application discloses a circuit for detecting binary information in crosstie memory systems includes a dual drain MOSFET device having a single channel with a common source and an integrated, thin-film strip of magnetic material suitable for the storage and propagation of Bloch line-crosstie pairs acting as both a shift register and the device's gate. Current flowing through the device, in the absence of a magnetic field, is equally distributed to each drain; however, changing magnetic fields, normal to the plane of the device and generated by Bloch line-crosstie pairs in the strip, interact with the current such that a distribution imbalance exists and one drain or the other receives a disproportionate fraction of the current depending upon the direction of the magnetic field.

Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040

0126 Generation and Display Apparatus
L. C. DeWitt
Department of the Air Force, Washington, DC
Filed 31 Jan 85 22p
PAT-APPL-6-696 679 Available from NTIS: price code A02
The present invention utilizes one hundred and twenty-eight unique coordinate sets to model or represent features such as moving models, projectiles, and universal features. These placeable features are combined by a coordinate set processor unit with fixed environmental features to provide a realistic visual display. Computer image generator systems have traditionally been severely limited in terms of the number of coordinate sets which could be processed. This invention overcomes prior limitations by reorganizing the necessary calculations such that an unreasonable penalty on throughput and/or hardware sizing is not leveled. Instead of transforming all coordinate sets into each display channel (this would require 128 coordinate sets X 10 channels = 1280 transformation matrices to be computed by a processor unit), all coordinate sets are first transformed in the present invention into environment space and then into specific display channels.

0127 Harmonic Distortion Reduction Technique for Data Acquisition
W. P. Evans
Department of the Air Force, Washington, DC
Filed 12 Jun 85 18p
PAT-APPL-6-743 853 Available from NTIS: price code A02
An analog to digital converter (ADC) is presented which uses a calibration technique to reduce harmonic distortion in data acquisition systems. This mechanization also allows faster conversion rates than previously possible for high resolution analog-to-digital converters. This converter makes use of a subrange or 'half Flash' architecture where the subrange digital-to-analog converter (DAC) is augmented with a software calibrated DAC which removes system nonlinearities. The advantage of this system is that it allows the building of higher speed data acquisition systems with higher spurious free dynamic range than would be possible with conventional techniques. By adding the correction to the input of the subrange ADC, correction resolution can be a fraction of a quanta. A second approach using the same mathematics places at the output of the ADC a RAM or ROM look up table which linearizes the transfer function.

High Accuracy Digital Acousto-Optic Matrix Computer
See 1044

0128 Improvements in Floating Point Addition/Subtraction Operations
P. M. Farmwald
Department of Energy, Washington, DC
Filed 24 Feb 84 38p
PAT-APPL-6-583 531 Available from NTIS: price code A03
Apparatus is described for decreasing the latency time associated with floating point addition and subtraction in a computer, using a novel bifurcated, pre-normalization/post-normalization approach that distinguishes between differences of floating point exponents.

0129 Maintenance Port System
D. J. Grone
Department of the Air Force, Washington, DC
Filed 14 May 85 114p
PAT-APPL-6-733 991 Available from NTIS: price code A06
The maintenance port system comprises a maintenance unit, user prom, an available CRT terminal, and a prom software development package. This system accepts parametric definitions for an automatic panel as defined by the designer, and formats the panel data for display and modifications on a CRT (cathode ray tube) terminal. Because the system controls the formats, standard display and modification procedures are then used for transmitting and receiving parameters and are the same from panel to panel.

Matrix Display Simulation
See 0371

Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
See 1054

0130 Method of and Apparatus for Generating an Interstitial Point in a Data Stream Having an Even Number of Data Points
T. R. Edwards
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 29 Oct 82, patented 9 Jul 85 12p
PATENT-4 528 639 Available from Comm. of Patents
Apparatus for doubling the data density rate of an analog to digital converter or doubling the data density storage capacity of a memory deviced is discussed. An interstitial data point midway between adjacent data points in a data stream having an even number of equal interval data points is generated by applying a set of predetermined one-dimensional convolute integer coefficients which can include a set of multiplier coefficients and a normalizer coefficient. Interpolator means apply the coefficients to the data points by weighting equally on each side of the center of the even number of equal interval data points to obtain an interstital point value at the center of the data points. A one-dimensional output data set, which is twice as dense as a one-dimensional equal interval input data set, can be generated where the output data set includes interstitial points interdigitated between adjacent data points in the input data set.

The method for generating the set of interstital points is a weighted, nearest-neighbor, non-recursive, moving, smoothing averaging technique, equivalent to applying a polynomial regression calculation to the data set.

0131 Multiplexed Data Stream Monitor
J. F. Gentry
Department of the Air Force, Washington, DC
Filed 8 Dec 83, patented 9 Jul 85 9p
PATENT-4 528 660 Available from Comm. of Patents
A multiplexed data stream circuit comprises a random memory stream which is transmitted together with a synchronization signal and a data clock. A counter circuit is reset by the synchronization signal and counts the data clock signals to accumulate counts uniquely identified accumulated count location is addressed in the random access memory to read the immediately preceding data state of the current signal and the immediately preceding data stream signal as read from the random access memory are compared by gating circuitry to identify characteristics of the data stream. State changes of the signals within the multiplexed data stream are identified if the gating circuitry comprises an EXCLUSIVE OR gate.

0132 Nonlinear Technique for High-Resolution Data Processing
R. A. Wagstaff, J. L. Berrou
Department of the Navy, Washington, DC
Filed 18 May 84 31p
PAT-APPL-6-611 811 Available from NTIS: price code A03
A nonlinear technique for high-resolution data processing produces high-resolut ion power spectra from the output of a conventional processor. First, a guess of the spectral estimate is formed. Then the spectral estimate is convolved with the system response function to produce estimated output levels. The differences between the estimated output levels and the measured output levels are used to modify the spectral estimate to produce a new guess. This process is repeated until certain criteria are satisfied. The present invention relates to data processing techniques, and more particularly to a nonlinear technique for high-resolution data processing to diminish the effect of system corruption.

Optical Disc Transport System
See 0980

0133 Parallel Local Interface Bus
G. J. Palatucci, C. M. Nowicki, R. Whitsel
Department of the Navy, Washington, DC
Filed 29 Nov 84 20p
PAT-APPL-6-677 136 Available from NTIS: price code A02
A modulat parallel local interface bus provides a two-way interface between a microprocessor and a plurality of distributed signal processing units which are controlled by the microprocessor. Likewise, the microprocessor is enabled to read operational parameter data from sensors in the signal processing units. In this way, a plurality of discrete signal processing units may be controlled to perform required RF transmit-receive functions. The units may also be monitored for any operational problems which could develop.

Phanton Computer Gating System
See 0971

Programmable Multichannel Sonobuoy Transmitter
See 0164

Programmable Realtime Interface between a Block Floating Point Processor and Memory
See 0208

0134 Real Time Data Smoother and Significant Values Selector
D. Armitage
Department of the Navy, Washington, DC
Filed 5 Apr 82, patented 8 Jan 85 14p
PATENT-4 493 047 Available from Comm. of Patents
A digital data preprocessor is disclosed wherein consecutive samples of noisy raw digital data telemetered from a dropsonde and decommutated are stored in a first storage stack of registers. Adjacent samples are subtracted, the adjacent first-differences therefrom are subtracted, and the resulting second-differences are stored in a second storage stack of registers. By a comparison of raw data with the second-differences, raw data distorted by noise are measured and subsequently restored to a new value calculated from valid values of raw data samples adjacent to the distorted value. The second-differences are fed through a series of adders to provide a sequence of second-sliding-sums which are stored in a third stack of storage registers. A significant value selector tests the sliding-sums using three different criteria. The results of the tests are used as a basis for selecting raw data samples from the stack for pre-output smoothing of the raw data. The pre-output smoothing and value selection allow for a reduction in the number of data points fed to a processor such as a refraction calculator.

Scanning Alarm Electronic Processor
See 0623

Spatial Light Modulator Having a Capacitively Coupled Photoconductor
See 1068

0135 Triple Matrix Product Optical Processors Using Combined Time-and-Space Integration
R. A. Athale, J. N. Lee
Department of the Navy, Washington, DC
Filed 10 Oct 84 31p
PAT-APPL-6-654 926 Available from NTIS: price code A03
This invention is directed to optical matrix multiplication, and more particularly, to the high-speed matrix multiplication of three matrices. The multiplication of three matrices is often encountered in problems involving the computation of singular values of matrices or involving orthogonal transformation of matrices.

0136 Variable Data Base Generator Apparatus
J. J. Maier, J. P. Woodard, J. V. Ferrante, M. A. Heffron
Department of the Air Force, Washington, DC
Filed 6 Oct 81, patented 20 Nov 84 5p
PATENT-4 484 297 Available from Comm. of Patents
The present invention relates broadly to a binary word generator apparatus, and in particular to a variable data base generator apparatus. An apparatus for generating a variable data base file from a single original entry control datum. The apparatus utilizes a microprocessor unit to interact with a logical number generator to modify the original entry control signal into a larger data base which may be similar to but not identical to the original datum signal.

0137 Variable Radix Processor
J. L. Burrows
Department of the Air Force, Washington, DC
Filed 16 Nov 82, patented 9 Jul 85 13p
PATENT-4 528 641 Available from Comm. of Patents
A variable radix processor is constructed on 1.25 micrometer CMOS/SOS. The processor, based upon a predetermined algorithm, is constructed to process radix 2 to 7 data wherein the data is input in a parallel-by-word, parallel-by-bit format. A format selection switch has the data input whereafter a plurality of switches outputs an address format to a bit-slice multiply-adder. The bit slice multiply-adder has ROMs addressed by the format selection switch. Based upon the predetermined algorithm, each unique address format causes the ROMs to output a unique word in parallel bits to a tally cascade circuit and then to a fast-carry adder. The processor can operate on a transfer function such as ZA = / or - (A / or - C), ZB = B wher A = sigma aiSi, B = biXi with very high throughput rates such as 380 million operations per second.

COUPLINGS, FITTINGS, & FASTENERS

0138 Adhesive Joint Formation under Field Conditions
L. H. Peebles
Department of the Navy, Washington, DC
Filed 30 Jul 84 20p
PAT-APPL-6-635 866 Available from NTIS: price code A02
This invention relates to a method for effecting repairs of the damaged components of a machinery in the field which would otherwise require high temperature treatment of the damaged components to form a metal-oxide epoxy joint in a shop The method includes preparing a repair patch which includes a metal sheet with the metal oxide layer thereon, applying a thin high performance protective coating thereover, covering thereof with a sacrificial backing sheet and then curing the adherent-top coat backing sheet to form a highly durable bonded system which can be stored until needed. At the time of repair the backing sheet is removed by sanding or grit blasting and the adherent is applied to the structure to be repaired under ordinary temperature conditions.

0139 Connection System
B. McCandless
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 30 Jun 82, patented 20 Nov 84 9p
PATENT-4 483 639 Available from Comm. of Patents
A mechanical connection system comprises a first body defining a receptable and a second body defining a pin matingly receivable in the receptacle by relative movement in a first directional mode. A primary latch is engagable between the two bodies to retain the pin in the receptacle. The primary latch is reciprocable in a second directional mode transverse to the first directional mode. A lock member carried by one of the bodies is operatively associated with the primary latch and movable, transverse to the second directional mode, between a locking position maintaining engagement of the primary latch and a releasing position permitting release of the primary latch. The lock includes an operator portion engagable to move the lock member from its locking position to its releasing position. The operator is located internally of the first body. An actuator is selectivity insertable into and disengagable from the first body. The actuator is movable relative to the first body when it is inserted for engagement with and operation of the operator.

0140 Daze Fasteners
L. R. Jackson, R. C. Davis, A. H. Taylor
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 17 May 83, patented 23 Apr 85 9p
PATENT-4 512 699 Available from Comm. of Patents
A daze fastener system for connecting two or more structural elements wherein the structural elements and fastener parts have substantially different coefficient of thermal expansion physical property characteristics is employed in this invention. By providing frusto-conical abutting surfaces between the structural elements and fastener parts any differences in thermal expansion/contraction between the parts is translated to sliding motion and avoids deleterious thermal stresses in the connection. An essential feature for isotropic homogeneous material connections is that at least two sets of mating surfaces are required wherein each set of mating surfaces have line element extensions that pass through a common point.

0141 Electrically Conductive Containment Vessel for Molten Aluminum
C. E. Holcombe, D. G. Scott
Department of Energy, Washington, DC
Filed 25 Jun 84 8p
PAT-APPL-6-623 875 Available from NTIS: price code A02
The present invention is directed to a containment vessel which is particularly useful in melting aluminum. The vessel of the present invention is a multilayered vessel characterized by being electrically conductive, essentially nonwettable by and nonreactive with molten aluminum. The vessel is formed by coating a tantalum substrate of a suitable configuration with a mixture of yttria and particulate metal 10 borides. The yttria in the coating inhibits the wetting of the coating while the boride particulate material provides the electrical conductivity through the vessel. The vessel of the present invention is particularly suitable for use in melting aluminum by ion bombardment.

0142 Flexible Line Support Assembly
C. H. Lang, M. S. Biss
Department of the Air Force, Washington, DC
Filed 19 Apr 83, patented 14 Aug 84 5p
PATENT-4 465 253 Available from Comm. of Patents
This abstract describes an assembly for supporting a flexible service line between a base structure and an object body mounted to the base structure for movement about lateral and elevation gimbal axes includes lateral and elevation drums fixedly mounted to the body and base structure, respectively, and an arm interconnecting the drums. A spiral groove is defined in the periphery of each drum for receiving looped portions of the line extending between its looped portions. Also, the arm is rotatably mounted at its opposite ends to the drums for accommodating relative movement between the body and base structure about the respective gimbal axes. The looped portions of the flexible lines are confined in the grooves on the drums and may expand and contract therein as the body moves relative to the base structure about the gimbal axes.

0143 Foldable Self-Erecting Joint
T. E. Pelischek
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 9 Mar 84 11p
PAT-APPL-6-588 039 Available from NTIS: price code A02
The invention relates to a foldable self erecting joint which may be used to deploy the tetratruss frame of the proposed shuttle launched triangular space station. The frame must be folded into the payload bay of the space shuttle orbiter. To deploy the frame the tubes are automatically unfolded and once in position should remain safely. A pair of hinged, tubular members in which the hinging is located at corresponding portions of the members are used. The opposite edge portions are connected by spring biased toggle links in the unfolded position. The members are nested against one of the members in substantial alignment and overcenter for securely locking the joint in the unfolded position.

0144 Hemispherical Latching Apparatus
K. H. Clark
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 23 Jul 82, patented 2 Apr 85 17p
PATENT-4 508 296 Available from Comm. of Patents
An apparatus for securing payloads in a space vehicle such as the space shuttle is described. The apparatus includes many latching assemblies carried by a platform on the vehicle and a like number of latching elements carried by the payload and adapted to mate with the latching assemblies. The novelty of the invention is believed to reside in the use of complementary hemispherical elements which automatically align and engage with one another. This enables a simple but effective mode of operation and avoids the need for hinged linkages and similar moving parts.

0145 High Pressure Turbine Rotor Two-Piece Blade Retainer
R. E. Schlechtweg
Department of the Air Force, Washington, DC
Filed 9 Feb 83, patented 6 Nov 84 6p
PATENT-4 480 958 Available from Comm. of Patents
This is a patent. A blade retainer for holding a turbine blade on a turbine rotor disc and sealing a cooling cavity formed between the disc and blade has a two-piece construction. The first piece performs the blade loading function, while the second piece performs the cavity sealing function. The two pieces are attached to the disc by a common set of fasteners, such as bolts.

0146 Hydraulic Locking Boltwork System
H. L. Self, T. L. Pickett
Department of the Navy, Washington, DC
Filed 20 Aug 84 10p
PAT-APPL-6-641 189 Available from NTIS: price code A02
The invention relates to means for locking large or small doors, which must be carefully secured, with several deadbolts. In particular, the invention relates to an hydraulic boltwork system which includes detection and automatic relocking means should unauthorized manipulation be attempted. Present lockbolt systems are mechanically driven by gears or linkages which limit the number of deadbolts that can be operated, or are mechanical locks which incorporate an hydraulic latching system. Pneumatic latches use air which is compressible and thus can readily be forced open. Low pressure hydraulic latches have insufficient pressure to operate efficiently and are easily jammed. None of the prior art systems take advantage of the fact that liquids are incompressible and can become as rigid as a mechanical linkage for locking purposes, nor do they fully utilize the benefits of hydraulics to detect unauthorized lock manipulation. The prior art frequently uses inefficient mechanical linkages, or fluid pressure to open latch bolts and springs (which can easily be forced open) to close them. Efficient systems for locking the bolts closed are lacking.

0147 Latch for Detachably Securing Electronic Cards Along Orthogonal Loading Axes
S. J. Kreta, J. J. Honn
Department of the Navy, Washington, DC
Filed 24 Jun 85 9p
PAT-APPL-6-748 094 Available from NTIS: price code A02
The present invention relates to a latch for detachably securing electronics cards along orthogonal loading axes. A planar fixed gate is rigidly securable to an external supporting structure and is provided with at least one elongated protrusion extending above one of the planar surfaces. A planar movable gate is rigidly securable to an external electronics mountable structure wherein said movable gate is provided with at least one elongated groove on a planar surface. The planar fixed gate and the planar movable gate are abuttingly engagable to each other with the protrusion matingly fitted within the corresponding groove. The orientation of the protrusion and groove are orthogonal to an axis of a first loading force applicable to the moving gate. A fastener such as a threaded bolt rigidly maintains the planar surfaces of the fixed gate in engagement with the movable gate for rigid support along a second loading axis orthogonal to the first loading axis.

0148 Length Adjustable Strut Link with Low Aerodynamic Drag
D. Nash
Department of the Air Force, Washington, DC
Filed 10 Jul 85 25p
PAT-APPL-6-753 462 Available from NTIS: price code A02
This patent application discloses a low aerodynamic drag structural link suitable for use within the housing of a turbofan jet engine. The link includes length adjustment capability, pivotal end mounting provision, maintained airstream orientation capability, low mass and jam nut length and orientation locking. Several variations in link construction including a single ball and socket arrangement, varying link cross-section along its longitudinal length and the use of fairing nose and tail inserts are disclosed.

0149 Low-Profile Fastener
J. T. McGlone, R. L. McGiboney
Department of the Navy, Washington, DC
Filed 22 Feb 85 9p
PAT-APPL-6-704 124 Available from NTIS: price code A02
A low-profile fastener is described for securing parts such as swaybrace pads, mounting blocks and suspension loops onto exterior surfaces of multiple ejector racks in aircraft. The fastener consists of a retainer housing formed with an annular neck and a thin wrench head, and an insert threaded into the nut with internal threads. The fastener neck is inserted from within the rack through a mounting hole aligned with a hole of the part to be secured. A bolt inserted through the holes from the exposed side of the part is screwed into the insert and tightened to the desired torque.

The thin wrench head is the only portion of the fastener protruding into the rack.

0150 Mechanical Fastener
A. B. Stacey
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 7 Oct 83, patented 4 Jun 85 7p
PATENT-4 520 601 Available from Comm. of Patents
A device for fastening a temporary replacement heat shield tile to the strain isolation pad of a space vehicle is disclosed. An internally treaded, flanged cylinder is rotatably connected to a threaded brass plug through a flanged aluminum sleeve to form the device. The device is adhesively attached to the replacement title before using. In using the device, the tile containing the device is placed against the strain isolation pad of the space vehicle such that the flanged portion of the flanged cylinder rests against the strain isolation pad. This flanged portion, which consists of a plurality of L shaped blades, is then rotated into the strain isolation pad. The brass plug is then rotated with respect to the flanged stainless steel cylinder to draw the tile snuggly against isolation pad and thus complete the fastening process.

0151 Over-Center Toggle Latch
F. T. Hinds
Department of the Air Force, Washington, DC
Filed 14 Aug 84 12p
PAT-APPL-6-640 623 Available from NTIS: price code A02
This patent application discloses an improved low profile over-center toggle latch arm with an internally threaded latch barrel nut for adjustable cooperation with a threaded latchd draw bolt. The bolt is pivotally coupled to a latch handle assembly. The latter comprises projecting sidewalls and a grip end. The latch handle assembly is mounted by means of integral flanges cooperating with journals defined in a mouting stirrup, the latter being mounted on the container body.

0152 Padlock Shackle
D. Goldstein
Department of the Navy, Washington, DC
Filed 5 Jul 84 15p
PAT-APPL-6-627 936 Available from NTIS: price code A02
An object of this invention is to provide a new type of padlock shackle. Another object of this invention is to provide a padlock shackle which is resistant to carbide toothed saws. A further object of this invention is to provide an inexpensive padlock shackle which is resistant to carbide toothed saws and chemical attack. Yet another object of this invention is to provide a new method of manufacturing a new type of padlock shackel. These and other objects of this invention are achieved by providing a padlock shackle made of an inner core of ductile Nitinol alloy, an outer casting of hardened stainless steel, and an intermediate layer of a composite of from 20 to 33 volume percent of tungsten carbide particles of from more than o.6 mm to less than 2.0 mm in size with the remainder of the composite being essentially a matrix of a nickel-titanium alloy wherein nickel comprises from 53 to 62 weight percent of the alloy with the remainder of the alloy being essentially titanium.

0153 Pneumatic Clamping Device
B. A. Kosmal, F. W. Auld
Department of the Air Force, Washington, DC
Filed 15 Mar 83, patented 18 Dec 84 6p
PATENT-4 488 713 Available from Comm. of Patents
A pneumatic clamping device used to clamp a plurality of sheets together includes a cylinder with a guide element at one end defining a pneumatic chamber within the cylinder and a piston having an elongated shaft, a cylindrical head on one end of the shaft and a clamping foot on an opposite end of the shaft. The piston head is movable within the cylinder chamber, while the piston shaft extends through the guide element and positions the piston foot for insertion through aligned holes in the sheets when the shaft is substantially extended from the cylinder. A coil spring is positioned in the cylinder chamber between one side of the piston head and an end of the cylinder opposite from its one end for biasing the shaft to its extended position. Pressurized air for a source thereof may be supplied to the cylinder chamber at an opposite side of the piston head for overcoming the bias force of the coil spring, resulting in retraction of the piston shaft and clamping of the sheets together between the foot and the cylinder.

0154 Releasable Cable Connector Assembly for Use between a Mobile and Stationary Object
O. V. Fowler
Department of the Air Force, Washington, DC
Filed 1 Dec 82, patented 25 Dec 84 10p
PATENT-4 490 002 Available from Comm. of Patents
A cable connector assembly for releasably securing a pair of cable portions of a cable together, the cable connector assembly having a stationary housing made up of two outer shell subassemblies, a movable inner shell subassembly slidable within one of the two outer shell subassemblies, and a mounting fixture for securing the stationary subassemblies of a fixed object. One of the cable portions has one end secured to a movable object and the other end secured to the inner shell subassembly. The other cable portion has one end secured to a fixed object and the other end secured to the other of the outer shell assemblies. During normal conditions, the cable portions are securely connected together. Upon the application of a predetermined amount of force to the movable portion of the cable, the inner shell subassembly withdraws from the one outer shell subassembly in order for disconnection of the cable portions to take place in a reliable, safe and efficient manner.

0155 Remote Controlled Vacuum Joint Closure Mechanism
D. W. Doll, E. R. Hager
Department of Energy, Washington, DC
Filed 22 Feb 84 36p
PAT-APPL-6-582 507 Available from NTIS: price code A03
A remotely operable and maintainable vacuum joint closure mechanism for a noncircular aperture is disclosed. The closure mechanism includes an extendible bellows coupled at one end to a noncircular duct and at its other end to a flange assembly having sealed grooves for establishing a high vacuum seal with the abutting surface of a facing flange which includes an aperture forming part of the system to be evacuated. A plurality of generally linear arrangements of pivotally coupled linkages and piston combinations are mounted around the outer surface of the duct and aligned along the length thereof. Each of the piston/

linkage assemblies is adapted to engage the flange assembly by means of a respective piston and is further coupled to a remote controlled piston drive shaft to permit each of the linkages positioned on a respective flat outer surface of the duct to simultaneously and uniformly displace a corresponding piston and the flange assembly with which it is in contact along the length of the duct in extending the bellows to provide a high vacuum seal between the movable flange and the facing flange. A plurality of latch mechanisms are also pivotally mounted on the outside of the duct. A first end of each of the latch mechanisms is coupled to a remotely controlled latch control shaft for displacing the latch mechanism about its pivot point. In response to the pivoting displacement of the latch mechanism, a second end thereof is displaced so as to securely engage the facing flange and maintain the high vacuum seal established by the displacement of the flange assembly and extension of the bellows without displacing the entire duct.

0156 Reusable Thermal Cycling Clamp
W. J. Debnam, A. L. Fripp, R. K. Crouch
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 17 Nov 81, patented 1 Jan 85 6p
PATENT-4 491 427 Available from Comm. of Patents
A reusable metal clamp for retaining a fused quartz ampoule during temperature cycling in the range of 20 deg C to 1000 deg C is described. A compressible graphite foil having a high radial coefficient of thermal expansion is interposed between the fused quartz ampoule and metal clamp to maintain a snug fit between these components at all temperature levels in the cycle.

0157 Slide Release Mechanism
J. W. Bunker, R. S. Ritchie
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 30 Jun 82, patented 23 Apr 85 8p
PATENT-4 512 678 Available from Comm. of Patents
A releasable support device is described which is comprised of a hollow body with a sleeve extending transversely there-through for receiving the end of a support shank. A slider-latch, optionally lubricated, extends through side recesses in the sleeve to straddle the shank, respectively, in latched and released positions. The slider-latch is slid from its latched to its unlatched position by a pressure squib whereupon a spring or other pressure means pushes the shank out of the sleeve. At the same time, a follower element is lodged in and closed the hole in the body wall from which the shank was discharged. The mechanism was designed for the shuttle orbiter/external tank connection device.

0158 Stud Hardware with Self-Contained Stud Anti-Rotation Feature and Method of Installing Studs
J. S. Kartik, W. M. Richardson
Department of Energy, Washington, DC
Filed 14 Mar 84 14p
PAT-APPL-6-589 279 Available from NTIS: price code A02
Disclosed herein is a method and apparatus for preventing the rotation of a stud member during preloading. The apparatus comprises a stud member having a shaft portion extending into the member to be clamped and a hex or double hex portion carrying a locking nut. Extending outward from the hex or double hex portion of the stud there is a threaded portion carrying a nut which is torqued to preload the stud. Between the locking nut and the member to be clamped is a locking ring which engages the locking nut to prevent the stud from rotating during preloading. Also disclosed is a method of preloading a stud without the use of an external restraint to prevent the stud from rotating when a torque is applied.

0159 Tube Coupling Device
W. N. Meyers, L. A. Hein
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 18 Jan 85 12p
PAT-APPL-6-692 801 Available from NTIS: price code A02
A first annular ring has a keyed opening sized to fit around the nut region of a male coupling and a second annular ring has a keyed opening sized to fit around the nut of a female coupling. Each ring has mating ratchet teeth and these rings are biased together, thereby engaging these teeth and preventing rotation of these rings. This in turn prevents the rotation of the male nut region with respect to the female nut. For tube-to-bulkhead locking, one facet of one ring is notched, and a pin is pressed into an opening in the bulkhead. This pin is sized to fit within one of the notches in the ring thereby preventing rotation of this ring with respect to the bulkhead.

0160 Vehicle-to-Vehicle Connection Mechanism
J. L. Celentino
Department of the Army, Washington, DC
Filed 2 Aug 84 11p
PAT-APPL-6-637 250 Available from NTIS: price code A02
A device for temporarily attaching two vehicles to form a united structure is disclosed. The device has a rod which extends from the first vehicle into a complimentary grasping means on the second vehicle. The grasping means can be activated to hold the rod firmly so retraction towards the first vehicle will draw the vehicles together.

DETECTION: Acoustic Detection

0161 Broadband Matching Network
S. E. Spychalski
Department of the Navy, Washington, DC
Filed 11 Jun 84 7p
PAT-APPL-6-619 436 Available from NTIS: price code A02
A broadband matching network for a Helmholtz resonator transducer is a series RL matching network capable of withstanding a high power level. The usable acoustic broadwidth is expanded to produce a symmetrical output over a broad frequency band.

0162 Deep Ocean Wide Band Acoustic Baffle
J. L. Held, K. D. Collins, G. R. Mackelburg
Department of the Navy, Washington, DC
Filed 20 Jun 83, patented 11 Dec 84 7p
PATENT-4 488 271 Available from Comm. of Patents
In this patent hydroacoustic transducer provides an improved hemispherical radiation pattern throughout a wide range of operating depths. A can-shaped transducer is nestled in the inside of a hat-shaped array of hollow spheres. Resiliently mounting the spheres with respect to each other and a hat-shaped shell holds the array away from the surface of the transducer and layering the hollow spheres assures the hemispherical pattern. Fashioning the spheres from hemispherical shells of aluminum and bonding them

together makes the array insensitive to greater or lesser hydrostatic pressures and potting the array in polyurethane presents a more rugged structure capable of withstanding the routine abuses of the ocean environment.

0163 Directional Line-Hydrophone Array Calibrator
J. F. Zalesak, P. H. Rogers
Department of the Navy, Washington, DC
Filed 29 Jun 82, patented 28 Aug 84 29p
PATENT-4 468 760 Available from Comm. of Patents
A calibrator for determining the directivity pattern and complex sensitivity of a line hydrophone array including a calibration chamber, filled with a selected fluid, for sealing the array therein. Projectors, for generating acoustic waves, and monitors, for measuring the amplitude and phase of acoustic waves incident thereon, are mounted within the chamber. The projectors and monitors are connected to a computerized control circuit that drives the projectors to generator a calibration wave, with a predetermined amplitude and phase relative to the center of the array, corresponding to a free plane wave incident at an angle theta to the axis of the chamber.

0164 Programmable Multichannel Sonobuoy Transmitter
A. M. Bates, W. H. Sandford, M. T. Junod
Department of the Navy, Washington, DC
Filed 20 Jun 84 19p
PAT-APPL-6-622 368 Available from NTIS: price code A02
A programmable phase-locked loop frequency synthesizer for a multi-channel sonobuoy transmitter is disclosed. The phase-locked loop, including a counter/dividr utilizing variable modulus prescaling techniques, is modulated at its voltage-controlled oscillator (VCO) by an external signal which is preemphasized by a compensation network in order to correct for the roll-off characteristic response of the loop below its natural frequency.

0165 Sampled Towed Array Telemetry
A. L. Moorcroft
Department of the Navy, Washington, DC
Filed 26 Jul 82, patented 7 Aug 84 8p
PATENT-4 464 739 Available from Comm. of Patents
A system for detecting and identifying acoustic sound sources using a plurality of identical data acquisition modules spaced at preselected intervals along a line array. Two small diameter coaxial cables provide inter-modular connections for power, timing control and sequential data transmission to a remote receiver. A control clock waveform leading edge simultaneously triggers sampling and holding of sensor data at each module of the array while the waveform trailing edge is delayed for a preselected interval at each module to provide sequential data output.

Sonobuoy Float Inflation and Depth Selection Initiators
See 0737

0166 Tactical Expendable Device
H. T. Loeser, H. J. Doebler
Department of the Navy, Washington, DC
Filed 19 May 82, patented 25 Sep 84 8p
PATENT-4 473 896 Available from Comm. of Patents
This patent is for a Tactical Expendable Device (TED) adapted to be ejected into the water from a variety of launch platforms. It achieves and remains substantially stationary at a predetermined operating depth for a predetermined time interval or sinks at a predetermined rate for sensing acoustic signals and transmitting such signals to the launch platform through a long, small diameter connecting cable such as a fiber optic filament. The TED system comprises the TED cannister, a long connecting cable, deployment means on the launch platform including a launch tube with integral dereeler, a buffer and onboard signal processing/display equipment. The TED cannister further comprises a sensing element, a buffer, a power source and a dereeling device.

DETECTION: Optical Detection

0167 Buried Junction Enhanced Schottky Barrier Device
L. H. Skolnik
Department of the Air Force, Washington, DC
Filed 22 Aug 84 7p
PAT-APPL-6-643 139 Available from NTIS: price code A02
The present invention contemplates a completely submersed Schottky barrier junction in order to enhance collection efficiency of photogenerated carriers. Using a buried active back-to-back thin junction allows collection of carriers generated with momentum vectors in both the forward and reverse directions. Thus, the quantum efficiency and sensitivity of the infrared detector is substantially enhanced. In addition, thicker Schottky metallizations can be used to enhance spectral absorption of incident infrared light.

0168 Direct View Helmet Mounted Telescope
T. R. Connon
Department of the Air Force, Washington, DC
Filed 25 Jul 84 8p
PAT-APPL-6-634 247 Available from NTIS: price code A02
An improved helmet is provided including an optical system whereby the wearer may telescopically acquire an image of a field of view, which comprises a telescope retractably mounted to the helmet by means of a two-part hinged boom, one end of which is pivotally attached to the side of the helmet, and the other end of which supports the telescope via a rotatable and adjustable mounting whereby the telescope may be conveniently moved from a stored position beside the helment to an operative position in front of the wearer's eye, and aligned and focused in the operative position.

0169 Double Photon Excitation of High-Rydberg Atoms as a Long-Lived Submillimeter Detector
A. Chutjian
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 21 Feb 85 15p
PAT-APPL-6-703 847 Available from NTIS: price code A02
A method and apparatus for detecting submillimeter or IR radiation is disclosed. A rare gas, such as xenon, is supplied at its ground state via a pressurized cylinder and an adjustable leak valve into a cryogenically cooled detection area. The ground state of xenon is double photon excited to a particularized level of the Rydberg series by a resonance lamp and a laser. The doubly excited gas is then further excited by the radiation to be measured. A field ionization and an ion measurement indicative of the radiation intensity is achieved.

Dual Mode Radio Frequency-Infrared Frequency System
See 0968

0170 Dual Mode Scanner/Tracker
R. J. Mongeon
Department of the Army, Washington, DC
Filed 9 Nov 84 11p
PAT-APPL-6-669 912 Available from NTIS: price code A02
The beam of a laser radar is moved over the field of view by means of a pair of scanner/trackers arranged in cascade along the laser beam. One of the scanner/trackers operates at high speed, with high resolution and a wide field and is located in the demagnified portion of the laser beam. The two scanner/trackers complement each other to achieve high speed, high resolution scanning as well as tracking of moving targets. A beam steering telescope for an airborne laser radar which incorporates the novel dual mode scanner/tracker is also shown. The other scanner/tracker operates at low speed with low resolution and a wide field and is located in the magnified portion of the laser beam.

0171 Electro-Optical Target Detection
H. Graff, J. D. Joseph
Department of the Air Force, Washington, DC
Filed 15 Apr 82, patented 14 Aug 84 5p
PATENT-4 465 940 Available from Comm. of Patents
An apparatus directed to a signal processing circuit for combining data from several spectral bands to enhance the signal-to-background ratio of a target detection system. Two spectral bands, with separate sensing arrays, receive analog signals which are fed to separate multiplexer units. From the multiplexers, the analog signals are applied to a comparator where they are compared with each other and also separately applied to shift registers where the signals are retained for further processing. If, during comparison, the ratio of the two bands is less than a threshold, there is an absence of cloud return and the signals stored in both shift registers are combined in a final output register. If the ratio of the two bands is more than a threshold, the band having the most cloud return is not used and the shift register containing the greater percentage of target return is processed through the output register.

Focal Plane Array Optical Proximity Sensor
See 1042

0172 Infrared System with Computerized Image Display
R. P. Walker, J. D. Rex, J. H. Schummers
Department of the Air Force, Washington, DC
Filed 29 Jul 82, patented 28 May 85 15p
PATENT-4 520 504 Available from Comm. of Patents
An object of this invention is to provide a system in which detected signals from an infrared scanner can be used to provide a calibrated display, and by which the data can be stored for later use. In the system according to the invention, image signals originating from an infrared scanner are transformed into a digitized form for storage in a computer and manipulated to produce a calibrated display. This transforms the merely qualitative utility of such a scanner into a quantitative capability allowing analysis of heat energy losses from structures of interest with only modest investments in capital equipment.

0173 Injection Controlled Laser Transmitter with Twin Local Oscillators
P. P. Chenausky, W. J. Green
Department of the Army, Washington, DC
Filed 25 Feb 85 13p
PAT-APPL-6-704 816 Available from NTIS: price code A02
A heterodyne carbon dioxide optical Doppler radar is described which comprises a ring type of transmitter laser and twin local oscillator lasers which are automatically controlled to operate at a difference frequency equal to the intermediate frequency of the radar, which may be in the VHF band. The output of one of the twin lasers is injected into the transmitter laser for stabilization purposes and the output of the other of the twin lasers is heterodyned with the received target return signals to form the radar's intermediate frequency signal.

0174 Means and Method for Calibrating a Photon Detector Utilizing Electron-Photon Coincidence
S. K. Srivastava
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 15 Mar 82, patented 4 Sep 84 9p
PATENT-4 469 942 Available from Comm. of Patents
An arrangement for calibrating a photon detector particularly applicable for the ultraviolet and vacuum ultraviolet regions is based on electron photon coincidence utilizing crossed electron beam atom beam collisions. Atoms are excited by electrons which lose a known amount of energy and scatter with a known remaining energy, while the excited atoms emit photons of known radiation. Electrons of the known remaining energy are separated from other electrons and are counted. Photons emitted in a direction related to the particular direction of scattered electrons are detected to serve as a standard. Each of the electrons is used to initiate the measurements of a time interval which terminates with the arrival of a photon exciting the photon detector. Only the number of time intervals related to the coincidence correlation and of electrons scattered in the particular direction with the known remaining energy and photons of a particular radiation level emitted due to the collisions of such scattered electrons are counted. The detector calibration is related to the number of counted electrons and photons.

Method and Apparatus for High Speed, Sustained Recording of Infrared Laser Beam Patterns
See 1010

0175 Method for the Preparation of Epitaxial Films of Mercury Cadmium Telluride
T. E. Erstfeld
Department of the Air Force, Washington, DC
Filed 22 Feb 83, patented 11 Dec 84 5p
PATENT-4 487 640 Available from Comm. of Patents
In accordance with the general concept of this invention, it has been found that high quality epitaxial films of (Hg,Cd)Te suitable for use as infrared detectors can be grown onto cadmium telluride substrates using a double barrel reactor and the technique of passing a hydrogen halide gas over separate CdTe and HgTe2 vaporizeable sources maintained at separate and distinct temperatures in the separate barrels of the reactor. The primary object of this invention is to provide a novel method for growing epitaxial films of (Hg,Cd)Te that posses a uniform gradient compositional content and are relatively free from defects. Another object of this invention is to grow epitaxial films of (Hg,Cd)Te onto

a suitable cadmium telluride substrate. Still another object of this invention is to provide a novel method of depositing a (Hg,Cd)Te film by vapor phase epitaxy in which t wo distinct and separate vaporizeable sources of reactant material are maintained at different temperatures and used in conjunction with a hydrogen halide reactant gas during the deposition and formation of the film.

0176 Mirror Actuator Control System
N. S. Goralnick, G. H. McLellan
Department of the Air Force, Washington, DC
Filed 27 Jan 82, patented 21 Aug 84 7p
PATENT-4 467 186 Available from Comm. of Patents
A mirror actuator control system utilizes a wavefront sensor to determine the resulting angle error signal between the wavefront tilt angle and the mirror tilt angle. The resulting angle error signal is used to drive the actuator unit which controls the mirror tilt angle.

0177 Optical Radar Transceiver Control Apparatus
R. J. Mongeon, R. J. Wayne, R. W. Henschke
Department of the Army, Washington, DC
Filed 1 Aug 85 21p
PAT-APPL-6-761 257 Available from NTIS: price code A02
The apparatus is part of an optical radar set and comprises a high powered CO2 pulsed transmitter laser which is injection controlled to operate at a fixed frequency offset from a lower powered CO2 local oscillator laser. A portion of the output of the local oscillator laser is applied to an acousto-optic Bragg cell, together with an RF signal equal to the desired intermediate frequency of the radar set. The upshifted first order output of the Bragg cell is injected into the transmitter laser for stabilization purposes. This results in a stable intermediate frequency for the optical radar set.

0178 Optical Sensing Devices
P. Shajenko
Department of the Navy, Washington, DC
Filed 13 Jun 83, patented 11 Jun 85 6p
PATENT-4 522 495 Available from Comm. of Patents
This patent describes optical sensing devices comprising dual chamber apparati which use signal and reference light beams together with interferometric methods for detection of physical quantities of interest. The signal part of the chamber experiences the effects of a particular physical quantity to be measured which produce variations in the optical length of the light beam by movement of a mirror, thereby modulating that beam in proportion thereto. Concurrently, the reference beam, of equal pathlength, is passed through an adjacent chamber, isolated from such effects. The modulated signal beam and unmodulated reference beam are then combined to form a fringe pattern, the zero and first order fringes which are superimposed on apertures of an optical fibers, which carry the resultant light beams to a photodetectors for converting the optical fiber, which carry the resultant light beams to a photodetectors for converting the optical signals to proportional electrical signals.

0179 Optical System for Measuring Shadowgraph Data
E. O. Cole, V. H. Yeterian
Department of the Air Force, Washington, DC
Filed 15 Oct 82, patented 19 Feb 85 11p
PATENT-4 500 206 Available from Comm. of Patents
An optical system for measuring azimuth and elevation angular data for making a shadowgraph of an object under study. The system includes a pair of scaled assemblies which are secured together perpendicular to each other, with each of the scaled assemblies having degree markings thereon. An object under study, such as a scale model of an aircraft, is positioned within an imaginary sphere formed by the two scaled assemblies. Azimuth and elevation angular measurements are then obtained by the use of laser systems as the model aircraft is rotated within the imaginary sphere of the ring assemblies.

0180 Reduction of Signal Modulation Caused by Polarization in Visible Optical Scanning Systems
M. R. Comer
Department of the Air Force, Washington, DC
Filed 26 May 82, patented 16 Oct 84 7p
PATENT-4 477 152 Available from Comm. of Patents
A method and an apparatus for minimizing the polarization modulation effect of an optical scanner system which is in an earth orbit and is scanning the earth, where the optical train of the scanner includes a plurality of optically aligned, rotatable, flat folding mirrors having incident angle normals in the same plane, with the mirrors serially reflecting an image acquired by the scanning of the system in orbit. The method includes the steps of rotating the most rearwardly disposed of the mirrors around its vertical geometric axis such that the reflecting surface of the mirror is perpendicular to the impinging image beam, and then rotating the mirror around its horizontal geometric axis such that the angle of incidence of the impinging image beam is of a preselected magnitude. This change in positioned relationship results in a novel apparatus which minimizes the aforesaid polarization modulation effect.

0181 Retinally Stabilized Differential Resolution Television Display
C. F. Ruoff
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 28 Sep 82, patented 23 Apr 85 11p
PATENT-4 513 317 Available from Comm. of Patents
A remote television viewing system employing an eye tracker is disclosed, wherein a small region of the image appears in high resolution, and the remainder of the image appears in low resolution. The eye tracker monitors the position of the viewer's line of sight. The eye tracker position data is transmitted to the remote television camera and control. Both the remote camera and television display are adapted to have selectable high-resolution and low resolution raster scan modes. The position data from the eye tracker is used to determine the point at which the high-resolution scan is to commence. The video data defining the observed image is encoded in a novel format, wherein in each data field, the data representing the position of the high resolution region of predetermined size appears first, followed by the high resolution zone video data and then the low-resolution region data. As the viewer's line of sight relative to the displayed image changes, the position of the high resolution region changes to track the viewer's line of sight.

0182 Self-Guarding Schottky Barrier Infrared Detector Array
F. D. Shepherd, P. W. Pellegrini, C. E. Ludington, M. M. Weeks
Department of the Air Force, Washington, DC
Filed 5 Jan 83, patented 23 Jul 85 6p
PATENT-4 531 055 Available from Comm. of Patents
A two dimensional focal plane array of Schottky photodiodes on a silicon substrate for infrared imaging. The array

is designed for mating with multiplexing circuitry and has a self-guarding feature wherein adjacent Schottky electrodes act as guard electrodes. This feature allows a substantial increase of the focal plane area coverage ratio.

0183 Sensor System
J. E. Heath, H. W. Swenson
Department of the Air Force, Washington, DC
Filed 30 Sep 82, patented 14 May 85 6p
PATENT-4 517 464 Available from Comm. of Patents
An infrared sensor system for use on satellites comprising dual arrays of mercury cadmium telluride semiconductor elements. One array of conventional photovoltaic detectors is wired in parallel with a novel array of HdCdTe material in which the n-type region of each mesa and the resulting p-n junction is considerably smaller than that utilized in the conventional detector. As the cumulative dose of incident radiation is increased, type conversion in both arrays occurs resulting in degraded performance in the conventional array but and increase in performance caused by the now effective p-n junction area in the novel array. An electronic switching device, coupled with a dosimeter, alternately selects the conventional array or the novel array depending upon the total dose of radiation received.

0184 Thermal Sensor with an Improved Coating
P. C. LaDelfe, S. C. Stotlar
Department of Energy, Washington, DC
Filed 30 Mar 84 19p
PAT-APPL-6-595 204 Available from NTIS: price code A02
The disclosure is directed to an apparatus for detecting radiation having wavelengths from about 0.4 mu m to about 5.6 mu m. An optical coating is applied to a thermal sensor that is normally transparent to radiation with such wavelengths. The optical coating is thin and light and includes a modifier and an absorber. The thermal sensor can be a pyroelectric detector such as strontium barium niobate.

DETECTION: Radiofrequency Detection

0185 Adaptive Fast Fourier Transform Weighting Technique to Increase Small Target Sensitivity
S. M. Bryant
Department of the Air Force, Washington, DC
Filed 2 Oct 84 28p
PAT-APPL-6-656 844 Available from NTIS: price code A03
A radar signal processor is described which operates without clutter canceller and AGC circuits by applying an adaptive weighting circuit which adjusts the FFT weighting function on a range gate basis to account for clutter in that range gate. An input buffer determines log to the base 2 values per range gate for use in the weighting operation and a normalization circuit scales the weighted FFT output to facilitate post-processing.

0186 Adaptive MTI (Moving Target Indicator) System
F. F. Kretschmer, B. L. Lewis, J. P. Hansen
Department of the Navy, Washington, DC
Filed 28 May 75, patented 10 Jul 84 7p
PATENT-4 459 700 Available from Comm. of Patents
This invention relates to improvements in signal processing systems and more particularly to improved techniques for eliminating interference or otherwise undesirable signal components from serial data samples to be processed by Moving Target Indicator type radar system processors.

0187 Adaptive Mutual Interference Suppression Method
B. N. O'Donnell
Department of the Air Force, Washington, DC
Filed 26 Jun 84 27p
PAT-APPL-6-624 568 Available from NTIS: price code A03
A method is described which provides automatic self synchronization (in time) between multiple pulse repetition frequency (PRF), pulse doppler radars. The synchronization technique time aligns data within a coherent look transmission (a group of pulses - typically milliseconds). This technique substantially eliminates sensitivity losses associated with blanking false alarms or detection from interfering radars transmitting (in time) at pulse repetition intervals (PRI) different than the host radar. An implementation of this method for a 2 PRF radar waveform is described although the technique may be extended to more than 2 PRF's. The technique provides an alternative approach to pulse shaping or multiple (different) frequencies to control MI but may be used in conjunction with these techniques to minimize sensitivity losses due to interference blanking.

0188 Adaptive Preprocessing System
B. L. Lewis, F. F. Kretschmer
Department of the Navy, Washington, DC
Filed 28 May 75, patented 7 Aug 84 6p
PATENT-4 464 768 Available from Comm. of Patents
The present invention preprocesses serial data sample sets so that truly independent samples are available for further processing. Samples to be analyzed are delayed and compared in order to isolate both components that are correlated between samples, and components that are uncorrelated between samples. These components provide independent information relating the samples which are used to modify or preprocess incoming data.

Attachment Method-Ceramic Radome to Metal Body
See 0699

0189 Bistatic Coherent Radar Receiving System
L. C. Yamano
Department of the Air Force, Washington, DC
Filed 31 Oct 84 30p
PAT-APPL-6-666 841 Available from NTIS: price code A03
A coherent-on-receive MTI radar receiver system for use with cooperative or non-cooperative radar transmitters of either the coherent or noncoherent, simple magnatron type and scanning antennas. The receiver includes coherent digital signal processing with provision for normalizing or compensating phase variations in the transmitter carrier pulses.

0190 Conformal Phased Array Antenna Pattern Corrector
J. D. Antonucci
Department of the Air Force, Washington, DC
Filed 15 Nov 84 14p
PAT-APPL-6-671 393 Available from NTIS: price code A02
The present invention relates to radar antenna systems and particularly to a pattern corrector for a conformal phased array monopulse antenna system. In certain monopulse radar applications, such as aboard aircraft, it becomes advantageous to mount a phased array antenna onto the curved exterior surface of the host vehicle. Such a con-

formal phased array antenna however, produces a distorted radiation pattern when the beam is scanned off of broadside.

0191 Detection of Angular Modulated Electromagnetic Signals
P. Van Etten
Department of the Air Force, Washington, DC
Filed 30 Nov 82, patented 25 Dec 84 5p
PATENT-4 490 829 Available from Comm. of Patents
A signal processing circuit which operates on a spread spectrum received signal to compress it into a waveform of sufficient amplitude to allow detection by conventional means. The received signal is filtered and split onto two paths, each path being mixed with an upper or lower single sideband created by an oscillator and modulator combination. The output of each mixer is filtered and mixed together in a third mixer, the resultant output of which is fed through a narrow bandpass filter to a conventional signal detector.

0192 Diagnostic Apparatus for Radar Pulse Repetition Frequency Control Circuit Card
T. S. Smith
Department of the Air Force, Washington, DC
Filed 25 Nov 81, patented 18 Sep 84 5p
PATENT-4 472 679 Available from Comm. of Patents
A portable circuit tester for troubleshooting a multiplier circuit card of the AN/MPS-9 and the AN/MSQ-2 radar systems, particularly when these systems are van mounted. During normal operation of the circuit tester, the circuit card is completely removed from the equipment console and connected to the test box. The test box circuitry provides the power supply and control selections necessary t operate the circuit card under realistic conditions while also allowing easy access to all components on the circuit card. The output form the test box is fed into one channel of a dual channel oscilloscope, with the input for the other channel coming from a probe connected to the test points on the circuit card being examined.

Dual Mode Radio Frequency-Infrared Frequency System
See 0968

0193 Electronically Controlled Array for Simulation of Passive Target/Background Signatures at Millimeter Wavelengths
A. H. Green, G. J. Rast
Department of the Army, Washington, DC
Filed 28 Nov 84 16p
PAT-APPL-6-675 916 Available from NTIS: price code A02
A system is described for an electronically controlled array for the simulation of passive signatures and noise at millimeter wavelengths. The system can simulate passive background signatures and also superimpose radiation intensity variation to simulate either moving or stationary passive signatures of targets over or within the background. A single, non-varying source of millimeter waves provides the noncoherent radiation for illumination that is required for simulating passive signatures. A controlled array variably controls radiation intensity at each illumination point of the array. The non-varying source is concentrated at the focal axis of a parabolic reflector, providing a plane wave-front of radiated energy.

0194 Fast Switching Driver for Inductive Load, Such as a Phase Shifter
W. E. Milberger, S. F. Payer
Department of the Air Force, Washington, DC
Filed 29 Jul 82, patented 4 Sep 84 9p
PATENT-4 469 961 Available from Comm. of Patents
A dual voltage inductive coil driver is used to rapidly switch between current levels in phase shifters. This approach provides a large voltage swing during the transient period, and then provides a low-dissipation low-voltage source during the steady state condition. The dual mode uses a linear low voltage loop and a nonlinear high voltage loop in the driver. The nonlinear loop may operate from the threshold or difference between either the input reference and coil current or input reference and coil voltage.

0195 Gain Restoration after Doppler Filtering
S. M. Bryant
Department of the Air Force, Washington, DC
Filed 2 Oct 84 17p
PAT-APPL-6-656 845 Available from NTIS: price code A02
Automatic gain control in a pulse doppler radar receiver is provided after doppler filtering by a gain restoration system which embodies dynamic correction based on variable returns from clutter and targets. The radar uses a digital fast automatic gain control (FAGC) with a technique known as block adaptive signal regulation (BASR). This technique evaluates all the time samples in a range gate before they enter the fast Fourier transform (FFT) circuit. The invention of this disclosure feeds the information regarding the number of BASR shifts, N, forward to the output of the FFT as a function of range gate. In this way the gain-corrected amplitudes are available for target centroiding. The concept of dynamic FAGC correction based upon the amplitude of clutter and target returns avoids the problems encountered when the system is used in an urban area or with a narrow clutter notch filter. In the past, such operation has resulted in a loss of detectability on small targets in the presence of large targets. However, the gain restoration system described herein feeds the information regarding the number of BASR shifts, N, forward to the output of the FFT as a function of range gate.

0196 Interference Suppressor for Radar MTI
B. L. Lewis, F. F. Kretschmer
Department of the Navy, Washington, DC
Filed 7 Aug 81, patented 18 Dec 84 5p
PATENT-4 489 320 Available from Comm. of Patents
An impulse interference suppression circuit for use in combination with an N-pulse Moving Target Indicator system comprising a gate connected to block the output signal from the MTI system when energized, and a circuit for taking the magnitudes of successive echo return signals, subtracting the magnitudes of consecutive echo signals to remove clutter, comparing the consecutive difference signals from such substractions against each other, and generating and applying a blocking signal to the gate if the difference between the subtraction difference signals is above a given threshold level.

0197 Laminated Thermoplastic Radome
E. E. Greene
Department of the Air Force, Washington, DC
Filed 26 May 82, patented 19 Mar 85 7p
PATENT-4 506 269 Available from Comm. of Patents
This patent discloses an improved rain resistance radome C-sandwich wall which is constructed of thermoplastic poly-

carbonate material. The cores are either posts or tubes and are bonded to the skins with polyurethane. The percentage of core material to air is adjusted by electrical tuning to make the optimum dielectric value for use in the gigahertz radar frequency range.

0198 Low Sidelobe Phased Array Antenna System
A. E. Blume
Department of the Air Force, Washington, DC
Filed 30 Nov 82, patented 18 Dec 84 4p
PATENT-4 489 324 Available from Comm. of Patents
This patent discloses that in a pulse radar system, wide angle sidelobes are reduced considerably in a phased array antenna by advancing each digital phase shifter by one bit just before each radar pulse is transmitted. This advice maintains the linear phase slope of antenna elements as the difference in phase between adjacent elements is uniform, thereby having little effect on the antenna's main beam. However, the radar return signals from the sidelobes are reduced in comparison to the main beam return due to the radar receiver's integration process.

0199 Method and Apparatus for Delta Kappa Synthetic Aperture Radar Measurement of Ocean Current
A. Jain
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 18 Mar 82, patented 2 Apr 85 8p
PATENT-4 509 048 Available from Comm. of Patents
A synthetic aperture radar (SAR) employed for delta k measurement of ocean current from a spacecraft without the need for a narrow beam and long observation times. The SAR signal is compressed to provide image data for different sections of the chirp band width, equivalent to frequencies and a common area for the separate image fields is selected. The image for the selected area at each frequency is deconvolved to obtain the image signals for the different frequencies and the same area. A product of pairs of signals is formed, Fourier transformed and squared. The spectrum thus obtained from different areas for the same pair of frequencies are added to provide an improved signal to noise ratio. The shift of the peak from the center of the spectrum is measured and compared to the expected shift due to the phase velocity of the Bragg scattering wave. Any difference is a measure of current velocity v sub o (delta k).

0200 Method and Apparatus for Four-Beam Radar
R. B. Chadwick
Department of Commerce, Washington, DC
Filed 10 Dec 84 17p
PAT-APPL-6-680 114 Available from NTIS: price code A02
A method and apparatus for producing remote profiling beams pointing alternately to the north, east, west or south by ordered distribution of phase shifts to elements of a square antenna array. Elements within a given group of four array elements share a related group of four phase shift means. Elements in a group trade phase shift means intragroup but there is no intergroup trading. The arrangement permits four-beam capability without unduly increasing the cost or complexity of the radar assembly over prior art assemblies. Also disclosed is a system for 'tipping' the array either virtually or physically to obtain a vertical beam.

0201 Method and Means for Providing Frequency Agile Operation of MTI (Moving Target Indicator) Radar
D. L. Creed
Department of the Air Force, Washington, DC
Filed 28 Apr 82, patented 22 Jan 85 5p
PATENT-4 495 501 Available from Comm. of Patents
The obtaining of simultaneous pulse-to-pulse transmitter carrier frequency agility and compatible moving target indicator (MTI) operation in conventional surveillance radars is achieved by the use of pairs of frequencies with a controlled relationship between the frequencies of each pair. A set of four pulses with different frequencies is sequentially transmitted and form two pairs of pulses. The difference between the frequencies of one pair of pulses is made equal to the difference between the frequencies of the second pair of pulses. MTI operation is obtained by differencing the pairs. Pulses having any three frequencies may be selected in any sequence before a constraint is imposed. The frequency of the fourth pulse is then determined by the frequencies of the first three pulses.

0202 Multiple Loop Sidelobe Canceller
R. J. Masak
Department of the Air Force, Washington, DC
Filed 27 Jan 82, patented 22 Jan 85 15p
PATENT-4 495 502 Available from Comm. of Patents
A sidelobe canceller using only a widely spaced auxiliary array can lose performance for multiple jammers located at angles corresponding to the grating lobe structure. The degradation is independent of the number of control loops used. A closely spaced auxiliary array cannot resolve and process closely spaced jammers but is less susceptible to grating lobe occurrences. Its performance can degrade for closely spaced jammers while the widely spaced array has the resolution capability required. A dual array has the resolution capability required. A dual array approach comprised of both widely and closely spaced subarrays was simulated and tested. Each subarray automatically compensated for the deficiencies of the other. The computer simulations predicted the precise nature and locations of these geometrical conditions when the system was tested. Auxiliary channel preprocessing can successfully be used with the dual array approach to simultaneously minimize the differential level problem for multiple jammers. Without preprocessing of the auxiliary array, little, if any cancellation may be achieved against weaker jammers.

0203 Phase Coded Pulse Expander-Compressor
B. L. Lewis
Department of the Navy, Washington, DC
Filed 11 May 82, patented 18 Jun 85 8p
PATENT-4 524 362 Available from Comm. of Patents
A pulse expansion and compression system, especially useful for radar ranging, comprising a pulse coder for expanding an input pulse and a pulse compressor of the matched-filter type. The coder consists of a plurality of delay stages into which the input pulse is fed, a discrete Fourier transform (DFT) circuit to which the output signals of the delay stages are fed by way of respective phase weights and for which every other frequency port is inverted prior to entry to a time-dispersion means (TDM) comprising an arrangement of adders interconnected by delay stages for differently delaying the output signals from the DFT. The TDM output is fed to a phase modulator and then to the transmitter. The echo signals are conjugated, time-inverted, and passed through the same DFT as the input pulse signal by way of the phase weights. The outputs of

the DFT are then inverted at every other frequency port and passed through the TDM, but this time in time-inverted order. The outputs of the TDM are fed through an envelope detector to provide a cross-correlated facsimile of the original input pulse.

0204 Phase only Adaptive Nulling in a Monopulse Antenna
R. L. Haupt
Department of the Air Force, Washington, DC
Filed 11 Jul 84 30p
PAT-APPL-6-629 926 Available from NTIS: price code A03
A monopulse radar having a single set of phase shifters shared by both sum and difference channels. The radar utilizes an algorithm that effects simultaneous nulling in the sum and difference patterns of its phased array antenna. An algorithm is developed for phase-only nulling which does not require knowledge of the location of interference sources.

0205 Phase-Coded Pulse Expander-Compressor
B. L. Lewis
Department of the Navy, Washington, DC
Filed 20 Sep 82, patented 2 Apr 85 11p
PATENT-4 509 051 Available from Comm. of Patents
A pulse expansion and compression system, especially useful for radar ranging, comprising a pulse coder for expanding an input pulse and a pulse compressor of the matched-filter type. The coder consists of a plurality of delay stages into which the input pulse is fed, a discrete Fourier transform (DFT) circuit to which the output signals of the delay stages are fed by way of respective phase weights and for which every other frequency port is inverted prior to entry to a time-dispersion-means (TDM) comprising an arrangement of adders interconnected by delay stages for differently delaying the output signals from the DFT. The adders are connected in N/2-fold cyclically permutated order to the frequency ports, where N is the number of frequency ports if that number is even, and N is the number of frequency ports less one if that number is odd. The TDM output is fed to a phase modulator and then to the transmitter. The echo signals are conjugated, time-inverted, and passed through the same DFT as the input pulse signal by way of the phase weights. The outputs of the DFT are then inverted at every other frequency port and passed through the TDM, but this time in time-inverted order. The outputs of the TDM are fed through an envelope detector to provide a cross-correlated facsimile of the original input pulse.

0206 Phased Antenna Array for Wind Profiling Applications
D. C. Hogg
Department of Commerce, Washington, DC
Filed 31 Oct 84 25p
PAT-APPL-6-666 594 Available from NTIS: price code A02
The invention relates to a phased antenna array for use with radar apparatus for wind profiling based on Doppler frequency shift measurements. More specifically, the invention relates to a diagonally-shaped or diamond-shaped, phased array of individual antenna elements oriented to be uniformly polarized in a predetermined direction which is at a 45 degree angle to the principal planes of the array such that the radiation patterns are similar and geometrically tapered in the principal planes.

0207 Pipelined Digital SAR Azimuth Correlator Using Hybrid FFT-Transversal Filter
C. Wu, K. Y. Liu
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 26 Oct 81, patented 11 Sep 84 22p
PATENT-4 471 357 Available from Comm. of Patents
A synthetic aperture radar system (SAR) having a range correlator is provided with a hybrid azimuth correlator which utilizes a block-pipe-lined fast Fourier transform (FFT). The correlator has a predetermined FFT transform size with delay elements for delaying SAR range correlated data so as to embed in the Fourier transform operation a corner-turning function as the range correlated SAR data is converted from the time domain to a frequency domain. The azimuth correlator is comprised of a transversal filter to receive the SAR data in the frequency domain, a generator for range migration compensation and azimuth reference functions, and an azimuth reference multiplier for correlation of the SAR data. Following the transversal filter is a block-pipelined inverse FFT used to restore azimuth correlated data in the frequency domain to the time domain for imaging.

0208 Programmable Realtime Interface between a Block Floating Point Processor and Memory
T. M. King
Department of the Air Force, Washington, DC
Filed 24 Sep 84 18p
PAT-APPL-6-653 641 Available from NTIS: price code A02
The programmable interface gives a Block Floating Point processor the capability of performing various real-time signal algorithms on collected radar data in an external batch memory. Normally, Block Floating Point processors are not capable of accomodating data having varying exponent scales such as the data received from a batch memory in a radar system. The programmable interface solves the exponential normalization process using two data paths, an instruction processor, a microscale processor, a pre-shift control and an address generator. Data flow instructions are passed from the instruction processor to the microcode processor which executes the particular instruction's timing sequence. The first data path passes data from the batch memory to the array processor and contains a pre-shifter to normalize the batch memory-stored data. The second data path passes the processed data from the processor to the batch memory. The pre-shifter portion of the first data path is controlled by a pre-shifter control section in the invention, which generates a 4-bit code used to command the pre-shifter. Finally, an address generator creates a sequence of fetch and store addresses for data travelling between the batch memory and the array processor.

0209 P1 Polyphase Code Expander-Compressor
F. F. Kretschmer
Department of the Navy, Washington, DC
Filed 11 May 82, patented 23 Apr 85 5p
PATENT-4 513 289 Available from Comm. of Patents
A pulse expansion and compression system, especially useful for radar ranging, comprising a pulse coder for expanding and input pulse and a pulse compressor of the matched-filter type. The coder consists of a plurality of delay stages into which the input pulse is fed, a discrete Fourier transform (DFT) circuit to which the output signals of the delay stages are fed by way of respective phase weights and for which every other frequency port is invert-

ed prior to entry to a time-dispersion-means (TDM) comprising an arrangement of adders interconnected by delay stages for differently delaying the output signals from the DFT. The TDM output is fed to a phase modulator and then to the transmitter. The echo signals are conjugated, time-inverted, and passed through the same DFT as the input pulse signal by way of the phase weights. The outputs of the DFT are then inverted at every other frequency port and passed through the TDM, but this tme in time-inverted order. The outputs of the TDM are fed through an envelope detector to provide a cross-correlated facsimile of the original input pulse.

0210 P2 Polyphase Code Expander-Compressor
F. F. Kretschmer
Department of the Navy, Washington, DC
Filed 11 May 82, patented 18 Jun 85 5p
PATENT-4 524 363 Available from Comm. of Patents
A pulse expansion and compression system, especially useful for radar ranging, comprising a pulse coder for expanding an input pulse and a pulse compressor of the matched-filter type. The coder consists of a plurality of delay stages into which the input pulse is fed, a discrete Fourier transform (DFT) circuit to which the output signals of the delay stages are fed by way of respective phase weights and for which every frequency port is phase-shifted prior to entry to a time-dispersion-means (TDM) comprising an arrangement of delay stages for differently delaying the output signals from the DFT. The TDM output is fed to a phase modulator and then to the transmitter. The echo signals are conjugated, time-inverted, and passed through the same DFT as the input pulse signal by way of the phase weights. The outputs of the DFT are then phase-shifted at every frequency port and passed through the TDM, but this time in time-inverted order. The outputs of the TDM are fed through an envelope detector to provide a cross-correlated facsimile of the original input pulse.

0211 Radar Calibration Using Direct Measurement Equipment and Oblique Photometry
D. I. Zulch, R. H. Brock
Department of the Air Force, Washington, DC
Filed 27 Jan 83, patented 18 Dec 84 6p
PATENT-4 489 322 Available from Comm. of Patents
A radar calibration apparatus for the metric measurement of ground position; by airborne photogrammetry using real time high precision imagery, the transformation of those measurements from camera coordinates to antenna coordinates, the conversion of transformed coordinates to direction cosines of a measured ground position, comparison to radar derived direction, and the calculation and automatic correction of bias errors in direction; of the radar measurement.

0212 Range-Only Multistatic Radar System
D. M. Montana, R. S. Herd
Department of the Air Force, Washington, DC
Filed 21 Apr 82, patented 12 Feb 85 17p
PATENT-4 499 468 Available from Comm. of Patents
A range-only multistatic radar system has a plurality of radar stations located in a square grid pattern. Each radar station has a plurality of low power pulsed transmitters and receivers that operate on omnidirection whip antennae. Echo information received by the receivers is transmitted to a computer wherein a technique is employed to deghost and identify real targets. The computer applies a range difference similarity test, a uniqueness test, and a position test to determine real targets from the plurality of echo returns received.

0213 RF-Primed High Power Halogen Vial Apparatus
H. Goldie, W. D. Cherry
Department of the Air Force, Washington, DC
Filed 23 Sep 82, patented 29 Jan 85 5p
PATENT-4 496 917 Available from Comm. of Patents
A high power halogen-filled vial stage receiver protector utilizing an RF priming source in conjunction with a pair of circular guides to provide a continuous supply of priming free electrons to the halogen gas-filled plasma limiter vial.

0214 Survivable Ground Base Sensor
G. W. Randig
Department of the Air Force, Washington, DC
Filed 26 Feb 85 64p
PAT-APPL-6-705 827 Available from NTIS: price code A04
The survivable ground base sensor is the basic element of a land-based distributed radar that consists of 60 or more individual subarrays, which are located in either a straight line or on the perimeter of a 200 nmi diameter circle in the north central U.S. At least 10 nmi separation is provided between individual subarrays. Each subarray is self-contained with emergency power and is operated unattended. There is no need for any interconnection between subarrays so that the survivability is improved, and there is no limit to the number of subarrays used except that imposed by cost and the desire for greater survivability. Since the spacing between subarrays is 10 nmi, a direct hit on one subarray will not damage an adjacent one so that a separate re-entry vehicles must be targeted to each subarray.

0215 Technique for Rapid Determination of Probability of Detection in Pulse Doppler Radars
S. M. Bryant
Department of the Air Force, Washington, DC
Filed 2 Oct 81 18p
PAT-APPL-6-657 099 Available from NTIS: price code A02
A technique and apparatus are disclosed for determining the performance of a pulse doppler radar system every integration period. The test is accomplished by injecting into the front end of the radar a highly calibrated signal during initialization or during a periodic test and measuring the signal at the Fast Fourier Transform (FFT) output. This measured signal is used by the radar signal processor as a reference signal which is adjusted for internally induced changes by the radar's signal processing system then summed with the in-phase amplitude of the selected range gate filter cell. The summed signal and the cell quadrature amplitude are then envelope detected, and a detection counter is incremented when the envelope detection compares favorably with the cell's constant false alarm rate. Each integration period, the process is repeated for all range gate filter cells to obtain a detection count.

0216 Test Signal Generator for Coherent Air-to-Ground Radars
R. A. Guhse
Department of the Navy, Washington, DC
Filed 23 Dec 83 14p
PAT-APPL-6-564 864 Available from NTIS: price code A02
A test signal generator for on the ground testing of coherent air-to-ground radars has a rotating antenna for simulating aircraft motion when receiving return radar signals. An

angular position sensor provides a signal which is proportional to the angular position of the rotating antenna. Correlation of these signals in the radar computer provides a radar test signal having realistic amplitude and doppler histories.

0217 Tracking Servo Compensator with Rate Aiding
B. E. Burkett
Department of the Air Force, Washington, DC
Filed 15 Aug 84 28p
PAT-APPL-6-640 902 Available from NTIS: price code A03
A tracking servo compensator is disclosed for radar systems which steer their antenna beams using a servomechanism that physically moves the antenna. The disclosed tracking servo compensator permits switching between trackers (e.g. from area to point track) and from one tracked target to another without undesirable transients that could cause loss of track. Rate aiding and target range estimates are provided when tracker base motion is known. The compensator works by providing a servo signal that continually monitors the error in estimated track point line-of-sight angular velocity independent of which tracker is employed or the target being tracked. When base motion is known, this signal is used to update the target range estimate so that an accurate rate aiding signal is available. The servo provides smooth controlled-speed transitions between track points during mode switching, and provides an input for manual slewing of the tracker platform offset track conditions. It also provides an estimate of platform to track point range.

ELECTROTECHNOLOGY: Antennas

0218 Beam Forming Network
P. W. Cramer
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 10 Dec 82, patented 5 Mar 85 12p
PATENT-4 503 436 Available from Comm. of Patents
The network, which is connected to a layer of 134 feed elements that transmit and receive microwaves, consists of a pair of circuit boards parallel to the feed element layer. One of the two boards has 87 dividers that each divide a signal to be transmitted into seven portions, and the other board has 134 combiners that each collect seven transmit signal portions and deliver the sum to one of the feed elements. A similar arrangement is used to handle received signals. The large number of interconnections are made by printed circuit conductors radiating from each of the numerous dividers and combiners, and by providing interconnection pins that interconnect the ends of pairs of conductors lying on the two boards. The printed circuit conductors extend in undulating paths that provide maximum separation of conductors to minimize crosstalk.

0219 Clock Distribution Circuit for Active Aperture Antenna Array
B. M. Bellman
Department of the Air Force, Washington, DC
Filed 21 Apr 83, patented 4 Jun 85 6p
PATENT-4 521 893 Available from Comm. of Patents
A system for communicating a time reference or clock signal to a plurality of processors over substantial distances where propagation time between units is significant compared to the processing time. The timing signal is in the form of two continuous sinusoidal waves of different frequency but equal amplitude, which are added to give equal contributions in the resultant composite, two frequency, sum signal. The resulting waveform has sharply defined nulls occurring at the difference which are used as a precise time reference.

0220 Compact Wideband Multiple Conductor Monopole Antenna
R. K. Royce
Department of the Navy, Washington, DC
Filed 9 Feb 82, patented 14 Aug 84 5p
PATENT-4 466 003 Available from Comm. of Patents
A wideband trap-loaded monopole antenna having small structural dimensions in a plane normal to the polarization axis. The traps are resistively-terminated quarter wavelength transmission lines. The locations and anti-resonant frequencies of the traps are selected to make the antenna's input impedance and gain nominally uniform parameters with respect to frequency.

Conformal Phased Array Antenna Pattern Corrector
See 0190

0221 Deployable Folded Antenna Apparatus
F. V. Bilek, D. N. Buell
Department of the Air Force, Washington, DC
Filed 13 Sep 82, patented 13 Nov 84 10p
PATENT-4 482 900 Available from Comm. of Patents
An antenna apparatus for use in space which is foldable into a small package for storage in a space vehicle. The antenna apparatus utilizes a plurality of hinged members and diagonal tapes forming parallelogram frames, two opposite sides of which are hinged at the center to fold the frames in a given plane. Similar frames are hinged on the first frames in a second plane whereby a plurality of cubes are formed when all are unfolded.

0222 Dual Band, Low Sidelobe, High Efficiency Mirror Antenna
D. D. Howard
Department of the Navy, Washington, DC
Filed 15 Jun 82, patented 11 Sep 84 4p
PATENT-4 471 359 Available from Comm. of Patents
A dual band mirror antenna employing a continuous mirror without a hole. Side-by-side feeds for each band and an electromagnetic lens, located behind a rotatable twist reflector (the mirror), collimate beams toward a pair of polarized reflectors located near the twist reflector and tilted to aim the reflected energy toward the twist reflector. One polarized reflector is reflective at the higher radiofrequency band and transparent at the lower and radiofrequency band. The other polarized reflector is reflective at both bands. Energy directed back toward the polarized reflectors from the twist reflector passes through the polarized reflectors to free space.

Dual Mode Radio Frequency-Infrared Frequency System
See 0968

0223 Dual Sense, Circularly Polarized Helical Antenna
H. P. Coleman
Department of the Navy, Washington, DC
Filed 19 Jul 82, patented 15 Jan 85 7p
PATENT-4 494 117 Available from Comm. of Patents
Document describes a helical antenna for radiating waves in both orthogonal states of circular polarization that is fed at the base by a first feed and at the tip by a second feed. The amplitude and phase of the signal from the first feed controls the amplitude and phase of the wave in the first orthogonal polarization while the amplitude and phase of

the second signal from the second feed independently controls the amplitude and phase of the wave in the second polarization state. Radiated waves of any arbitrary polarization state are formed by adjusting the amplitude and phase of the feed signal. Alternative embodiments are disclosed and claimed.

0224 ECM Multiple-Target Retrodirective Antenna
R. A. Hills
Department of the Navy, Washington, DC
Filed 15 Jan 73, patented 18 Sep 84 8p
PATENT-4 472 719 Available from Comm. of Patents
5A linear antenna array receives incoming microwave signals which are coupled to a wide-angle, microwave lens to produce a received beam pattern in azimuth. The beam pattern is crystal detected and log video amplified to produce an output signal comprising directional information in the amplitude level. The directional information is processed in a logic processor which converts information into binary voltage levels which are grated to appropriate switch drivers and to automatically decide the discrete received beam detecting target signal and to activate a switch which will enable ECM signals to be transmitted to radiate in the desired transmit beam. ECM signals which are grated through the switch apparatus by inputs from the logic processor are coupled to a second microwave lens apparatus which forms a beam pattern to be transmitted which is retro-directive with respect to the received beam pattern. The beam is transmitted by a linear antenna array.

0225 Hardwire Missile Receiver Coupler
T. A. Milligan
Department of the Air Force, Washington, DC
Filed 2 Mar 82, patented 14 Aug 84 7p
PATENT-4 465 985 Available from Comm. of Patents
A hardware missile receiver coupled line apparatus is inserted between the antenna output port and the receiver input in a missile communication link to allow signals to be coupled directly into the missile receiver before the missile launch. At launch, the cable to the side of the missile is pulled from the side of the missile. After the cable is pulled, the open circuited cable between the side of the missile and the coupling network does not degrade the signal transmission from the antenna to the receiver.

0226 Integrated Defense Communications System Antijamming Antenna System
P. W. Hannan
Department of the Air Force, Washington, DC
Filed 25 Sep 84 10p
PAT-APPL-6-654 338 Available from NTIS: price code A02
The isolation of mainbeam and sidelobe jamming signals from the desired signal being relayed by microwave communication links is accomplished by an antijamming antenna comprising a flat radome, a curved reflector and a transmit dipole. Positioned adjacent the dipole is a monopulse feed and comparator for main-beam jammers (dual-plane monopulse, multi-mode multilayer feed). Also forming part of the integrated antenna are auxiliary units for near-sidelobe and far-sidelobe jammers. An alternative embodiment includes a Cassegrain grating sub-reflector. Since the direction of the desired incoming signal in microwave communication links is precisely known, the antijamming antenna uses azimuth and elevation monopulse to make a spatial distinction between the desired incoming signal and the jamming signals. The antijamming antenna system outputs: a sum, azimuth difference elevation difference signals and isolated near-sidelobe jamming signals and far-sidelobe jamming signals on output ports which allow an adaptive processor to place pattern nulls on jammers located in the mainbeam and sidelobe region of the antenna.

0227 Integrated Dual Beam Line Scanning Antenna and Negative Resistance Diode Oscillator
R. E. Horn, H. Jacobs, F. Schwering
Department of the Army, Washington, DC
Filed 14 May 85 42p
PAT-APPL-6-733 836 Available from NTIS: price code A03
A millimeter wave dual beam line scanning antenna integral with a tunable solid state oscillator is disclosed. The antenna provides two fan-shaped beams from opposite faces and when the antenna is rotated, a roughly conical shaped scan obtains. Furthermore, variation of the oscillator frequency causes a variation in radiation angle and provides two line scanning beams from opposite faces.

0228 Loop Radiating Elements
C. A. Golt, J. W. Cassen, H. E. Schrank
Department of the Navy, Washington, DC
Filed 3 Nov 83 10p
PAT-APPL-6-548 468 Available from NTIS: price code A02
This patent application provides a suspension mount for a gyro sensor block suspension; eliminates dither cross-talk in a gyro triad having a set of common gyros with the same dither tuned suspension. A sensor block has three gyro mount locations situated such that, when attached, the gyro triad is mutually orthonogal to each other. Two of the gyro mount locations have a spring suspension, each of a different stiffness, formed by joining a central hub, to which the gyro is attached, with the sensor block mass via a plurality of spokes to form a torsional spring about the gyro dither axis.

Low Sidelobe Phased Array Antenna System
See 0198

0229 Low Sidelobe, High Efficiency Mirror Antenna with Twist Reflector
D. D. Howard, D. C. Cross
Department of the Navy, Washington, DC
Filed 15 Jun 82, patented 12 Mar 85 4p
PATENT-4 504 835 Available from Comm. of Patents
A mirror antenna employing a continuous mirror without a hole. A feed horn and an electromagnetic lens, located behind a rotatable twist reflector(the mirror), collimates a beam toward a polarized reflector located near the twist reflector and tilted to aim energy toward the twist reflector. Energy reflected back toward the polarized reflector from the twist reflector passes through the polarized reflector to free space.

0230 Method and Apparatus for Self-Calibration and Phasing of Array Antenna
C. Wu
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 30 Jul 82, patented 11 Dec 84 11p
PATENT-4 488 155 Available from Comm. of Patents
A technique for self-calibrating and phasing a lens-feed array antenna, while normal operation is stopped, utilizes reflected energy of a continuous and coherent wave broadcast by a transmitter through a central feed while a phase controller advances the phase angles of reciprocal phase shifters in radiation electronics of the array elements at dif-

ferent rates to provide a distinct frequency modulation of electromagnetic wave energy returned by reflection in one mode and leakage in another mode from the radiation electronics of each array element. The composite return signal received by a synchronous receiver goes through a Fourier transform processing system and produces a response function for each antenna element. Compensation of the phase angles for the antenna elements required to conform the antenna response to a precomputed array pattern is derived from the reciprocal square root of the response functions for the antenna elements which, for a rectangular array of NXM elements, is a response function T(n,m). A third mode of calibration uses an external pilot tone from a separate antenna element. Respective responses are thus obtained from the three modes of calibration.

0231 Method for Tuning a Phased Array Antenna
R. P. Gray
Department of the Air Force, Washington, DC
Filed 2 Mar 83, patented 14 May 85 5p
PATENT-4 517 570 Available from Comm. of Patents
During installation or maintenance of a phased array antenna system in which the transmission line to each element includes an adjustable phase shift device, it is required that the effective electrical lengths of the lines be adjusted to be equal, or alternatively that the phase errors be determined and stored as correction data for use during normal operation. One way of doing this is to phase modulate by / or - 90 deg the phase shift device of one element at a time, while applying a test signal to all elements. The signal is radiated by the array, received via a test antenna, and supplied to and envelope has different amplitudes at / 90 deg and - 90 deg of the modulation. The element is tuned by adjusting the length of its transmission line or the length of its transmission line or the adjustment of its phase shift device to obtain a null at the amplitude detector. In an improved technique, to reduce certain errors, sum tuning is used, in which the / or - 90 deg phase modulation is applied to all of the phase shift devices, except for that of the element being tuned.

Phase only Adaptive Nulling in a Monopulse Antenna
See 0204

Phased Antenna Array for Wind Profiling Applications
See 0206

0232 Printed Circuit Balun with a Dipole Antenna
M. W. Shields
Department of the Air Force, Washington, DC
Filed 10 May 83, patented 22 Jan 85 4p
PATENT-4 495 505 Available from Comm. of Patents
A coplanar printed circuit balun is described for connecting an unbalanced feedline to a balanced dipole antenna.

0233 Radio Frequency Lens Antenna
R. E. Clapp
Department of the Air Force, Washington, DC
Filed 7 Jul 83, patented 11 Jun 85 11p
PATENT-4 523 198 Available from Comm. of Patents
Multiple beam antennas are modified and improves through the use of lenses coupled together by hybrid junctions. A dual lens structure avoids circulators while permitting the lenses to be used both for transmission and for reception. A six lens structure provided perfect phase focusing utilizing an R-2R geometry with a Mobuis topology, giving 360 degrees of independent antenna beams from a single circular or cylindrical antenna array.

0234 Reducing Grating Lobes Due to Subarray Amplitude Tapering
R. L. Haupt
Department of the Air Force, Washington, DC
Filed 7 May 85 71p
PAT-APPL-6-731 646 Available from NTIS: price code A04
Subarray amplitude tapering is a simple, lower cost method of generating low sidelobes in an antenna's far field pattern. Unfortunately, this simple technique also generates unwanted grating lobes. Placing the exact amplitude taper at the element outputs produces the desired far field pattern, but the architecture is complicated and expensive. An alternative to these two techniques is a design process that entails placing amplitude tapering at subarray outputs and element amplitude tapers that are identical between corresponding elements in groups of identical subarrays. In this way, the amplitude taper approximates the desired taper much better than subarray tapering alone, yet groups of subarrays are identical so that the design remains very simple.

0235 Wide Angle Phased Array Dome Lens Antenna with a Reflection/Transmission Switch
C. Rothenberg, N. Bellmore
Department of the Air Force, Washington, DC
Filed 23 Nov 82, patented 1 Jan 85 7p
PATENT-4 491 845 Available from Comm. of Patents
An antenna assembly configured by the combination of the high forward gain of a conventional planar phased array antenna with the wide angle scanning capability of a dome antenna. The invention includes an optically fed phased array, which may be structurally configured similar to a conventional lens array, but comprises a reflection/transmission switch and an electronic phase shifter at each radiating element. The switches facilitate operation of the phased array in two distinct modes; when the switches are set for the transmission mode, the phased array operates substantially as a conventional lens array to scan a / or - 60 deg conical sector; when the switches are set for the reflection mode, the phased array behaves like a reflect array to scan an additional / or - 60 deg to / or- 20 deg sector.

ELECTROTECHNOLOGY: Circuits

0236 Adjustment of the Frequency-Temperature Characteristics of Crystal Oscillators
A. Ballato
Department of the Army, Washington, DC
Filed 28 Feb 85 18p
PAT-APPL-6-707 107 Available from NTIS: price code A02
The patent application relates generally to temperature compensated crystal oscillators utilizing piezoelectric resonators and more particularly to the alteration of the frequency-temperature characteristic of a piezoelectric resonator of a temperature compensated crystal oscillator. The frequency-temperature piezoelectric resonator in a temperature compensated crystal oscillator is adjusted by the inclusion of an equivalent inductive reactance connected to an oscillator circuit, with the equivalent inductive reactance being realized in the form of an inductorless Maxwell type bridge circuit containing the resonator. Such an arrangement provides a much larger variation in the temperature with a conventional capacitor in series with the piezoelectric resonator.

0237 Analog to Digital Converter
B. L. Lewis
Department of the Navy, Washington, DC
Filed 2 Jun 81, patented 11 Sep 84 9p
PATENT-4 471 340 Available from Comm. of Patents
A device for converting a signal voltage into a multi-bit digital word that defines the voltage magnitude and polarity. The input voltage V to be digitized is used to control the frequency of a voltage controlled oscillator, whose output is defined to be f=fo/kV. The signal out of the voltage controlled oscillator is fed to differential delay line filters that permit all digits to be derived in parallel. The filters comprise pairs of delay lines of unequal length, each pair feeding a respective phase detector whose output is amplified, diode-rectified and limited. To increase the accuracy of this device, an automatic frequency control loop can be incorporated to control fo. This loop zeros V occassionally and reads the output digital word to measure the frequency error and add a correcting voltage to the input voltage V when it is not zeroed for the measurement.

Analog-to-Digital Converter
See 0118

0238 Bidirectional Amplifier
J. T. Wright
Department of Energy, Washington, DC
Filed 2 Feb 84 18p
PAT-APPL-6-576 500 Available from NTIS: price code A02
A bilateral circuit is operable for transmitting signals in two directions without generation of ringing due to feedback caused by the insertion of the circuit. The circuit may include gain for each of the signals to provide a bidirectional amplifier. The signals are passed through two separate paths, with a unidirectional amplifier in each path. A controlled sampling device is provided in each path for sampling the two signals. Any feedback loop between the two signals is disrupted by providing a phase displacement between the control signals for the two sampling devices.

0239 Bipolar Digitizer Having Compression Capability
J. E. Simpson
Department of the Air Force, Washington, DC
Filed 27 Jan 83, patented 9 Jul 85 11p
PATENT-4 528 549 Available from Comm. of Patents
A bipolar digitizer (A/D converter) is disclosed which uses a single comparator circuit for initially determining the polarity of a sampled input signal and for thereafter comparing the absolute magnitude of the signal to an applied ramp voltage. The time required for the ramp voltage to exceed the magnitude of the sampled input signal is converted into a digital waveform representative of the magnitude of the sampled input signal. Resistive means are selectively connected in shunt with a signal storage capacitor to achieve bipolar signal compression and increased dynamic range.

CCD (Charge-Coupled Device) Gaussian Convolution Method
See 0359

0240 Coaxial Cavity Gunn Oscillator Using Probe Coupled Microstrip
R. E. Horn
Department of the Army, Washington, DC
Filed 27 Dec 84 20p
PAT-APPL-6-679 972 Available from NTIS: price code A02
A millimeter wave microstrip transmission line is coupled to a solid state mechanically tunable cylindrical resonating coaxial cavity millimeter-wave oscillator by means of a probe extending linearly from the microstrip through an access slot in the cylindrical cavity wall into the zone of optimum electric field strength in the oscillator cavity to effect the translation of a TEM wave from the resonating cavity to the microstrip line at optimum power transfer and without wave mode change.

0241 Coherent Array of Josephson Oscillators with External Bias Leads
J. E. Lukens, A. K. Jain, P. M. Mankiewich
Department of the Navy, Washington, DC
Filed 29 Apr 81, patented 4 Sep 84 5p
PATENT-4 470 023 Available from Comm. of Patents
A coherent array of Josephson oscillators is provided. Individual hysteresis-free Josephson junctions are longitudinally arranged in a line and have such a spacing as to substantially eliminate quasiparticle interactions. To provide a common frequency of operation, equal and opposite dc voltages are produced in adjacent pairs of the Josephson junctions by an arrangement of interlocking dc SQUID's (Superconductive Quantum Interference Device) connected to transversely extending biasing leads. Phase coherence for the array is provided by a rf current circulating in an inductive feedback path that loops between the ends of the array.

0242 Combined Microwave Parallel Amplifier-RF Attenuator/Modulator
M. L. Reuss
Department of the Navy, Washington, DC
Filed 17 Feb 83, patented 16 Oct 84 6p
PATENT-4 477 781 Available from Comm. of Patents
A parallel channel microwave amplifier comprising a plurality of amplification channels interconnecting a power-dividing matrix and a power-combining matrix. Each amplification channel includes a phase shifter, an attenuator and a power amplifier connected in series. The device functions as a combination of amplifier and an r.f. attenuator/modulator.

0243 Comparator with Noise Suppression
C. N. Batts
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 18 Dec 84 9p
PAT-APPL-6-683 101 Available from NTIS: price code A02
An apparatus for generating a single pulse the first time only that a noisy cyclic signal exceeds a reference level during a half-cycle is disclosed. For the positive half of a cycle of the noisy cyclic signa, a comparator 12 and a multivibrator 14 produce a fixed voltage output when the noisy cyclic signal first exceeds the reference level. A multivibrator 23 stops the production of the fixed voltage output when the noisy cyclic signal next passes the zero voltage level in the negative direction. Consequently, a single pulse is generated indicating that the signal exceeded the reference level during that half-cycle. Comparator 16 and multivibrator 17 are for producing pulses whenever the noisy cyclic signal exceeds the reference level during the negative half-cycle.

0244 Constant Rise AGC (Automatic Gain Control) Device
R. A. Slack
Department of the Navy, Washington, DC
Filed 25 Mar 85 19p
PAT-APPL-6-715 992 Available from NTIS: price code A02
The invented device provides automatic gain control (AGC) of incoming signals over a large dynamic range of input levels with a constant rise time. The constant rise AGC device includes a primary AGC loop for receiving the incoming or input signal and splitting the input signal to input and output components of the primary AGC loop. The input signal to the input component is processed within the primary AGC loop to control the gain of the input signal at the output component of the primary AGC loop. The primary AGC loop has a slow detector. A secondary AGC loop is provided within the primary AGC loop, and this secondary AGC loop includes the aforementioned input component and has its output connected to the slow detector. The secondary AGC loop has a fast detector for preventing self-imposed saturation. With this arrangement the secondary AGC loop can be utilized to provide a constant AGC buildup signal for any input signal which is greater than a predetermined dB range, and the remainder of the primary AGC loop, which receives the constant AGC buildup signal from the secondary AGC loop, can be optimized for desired rise and fall times so that the latter's output signal can be relatively unaffected by interference bursts, signal gaps, and fading in the input signal.

0245 Data Acquisition Channel Apparatus
C. H. Higgins
Department of the Air Force, Washington, DC
Filed 3 Jul 84 24p
PAT-APPL-6-627 691 Available from NTIS: price code A02
A hybrid integrated circuit data acquisition channel apparatus employing an operational amplifier fed by a low current differential bipolar transistor preamplifier having separate feedback gain and signal gain determining elements and providing an amplified signal output to a sample and hold and analog-to-digital converter circuits. The disclosed apparatus operates with low energy and small space requirements and is capable of operation without the sample and hold circuit where the nature of the applied input signal permits.

Demountable Coaxial Electrical Connector for In-Line Amplifiers
See 0306

0246 Dielectric Resonator Oscillators with Digital Temperature Compensation
A. J. Slobodnik
Department of the Air Force, Washington, DC
Filed 27 Mar 85 24p
PAT-APPL-6-716 729 Available from NTIS: price code A02
A digital compensation circuit for improving the temperature stability of dielectric resonator oscillators is disclosed. A temperature sensor indicates a measure of ambient temperature which is correlated with an amount of phase shift necessary to compensate for frequency drift in a dielectric resonator oscillator. The correlation is made using a correction table or correction function which is determined empirically in a calibration process. The necessary phase shift is then supplied via a voltage controlled phase shifter. This phase shifter is part of the RF oscillation loop which also includes an amplifier, directional coupler and dielectric resonator filter (including microstrip).

0247 Dielectric Resonator Stabilized Microstrip Oscillator
E. E. Niehenke, P. A. Green
Department of the Air Force, Washington, DC
Filed 11 Apr 85 16p
PAT-APPL-6-721 834 Available from NTIS: price code A02
A microstrip L-band bipolar dielectric resonator stabilized oscillator (DRO) devised in a moderate size (2 ft. x 5 in. x 3.6 in.), low-cost, reproducible circuit. Embedment of back to back varactors in the DRO provide voltage tuning for phase lock application without compromise of noise performance. Extremely low phase noise with a low I/f noise corner is achieved and the DRO is essentially constant in frequency and output power over temperature, all due to unique circuit configuration. An internal buffer amplifier and dc regulatory circuits provide a DRO that is insensitive to frequency pulling due to load changes and power supply voltage leads. New Standards of performance are accomplished that permit simplified stalo configuration with lower phase noise.

0248 Digital Coherent Detector
W. M. Waters, B. R. Jarrett
Department of the Navy, Washington, DC
Filed 11 Jan 82, patented 28 Aug 84 9p
PATENT-4 468 794 Available from Comm. of Patents
This invention relates generally to the field of coherent signal detection, and more particularlyy to a digital coherent detector for directly sampling and digitizing an IF signal. Objects of the present invention are: to significantly increase the phase accuracy obtained in the coherent detection of a signal; to eliminate the requirement for IF-to-baseband conversion in a coherent detector; to directly detect IF signals in a coherent detector; and It is yet a further object of the present invention to significantly reduce the hardware and cost in implementing a digital coherent detector for IF.

0249 Dual Mode Directionally Coupled Band Reject Filter Apparatus
H. L. Thal
Department of the Air Force, Washington, DC
Filed 19 Jan 83, patented 16 Oct 84 6p
PATENT-4 477 787 Available from Comm. of Patents
A dual mode directionally coupled band reject filter apparatus having coaxially aligned first and second cylindrical cavity members which are asymmetrically mounted to the broadwall of a waveguide. Both cylindrical cavity members include a plurality of tuning screws to establish elliptic-type responses.

0250 Dual-Gate MESFET Variable Gain Constant Output Power Amplifier
M. Kumar
Department of the Navy, Washington, DC
Filed 4 Jun 81, patented 26 Jun 84 6p
PATENT-4 456 889 Available from Comm. of Patents
A variable-gain, constant output power amplifier which generates an output rf signal of constant power level in response to an input rf signal of varying power level. The amplifier gain is preadjusted by a plurality of feed-forward automatic-gain-control circuits to provide the constant output power. The amplifier comprises five dual-gate

MESFET signal-amplifying stages. The first and last stages do not have built-in automatic-gain-control. The first stage is provided for preamplification prior to sampling the input signal, and the last stage is provided for setting the level of the output power externally. The signal at the input of each of the middle three stages is sampled through a coupler and detected and processed at video frequencies to dynamically preadjust the gain of the next signal-amplifying stage.

0251 Electronic Logic for Enhanced Switch Reliability
J. A. Cooper
Department of Energy, Washington, DC
Filed 20 Jan 84 15p
PAT-APPL-6-572 338 Available from NTIS: price code A02
A logic circuit is used to enhance redundant switch reliability. Two or more switches are monitored for logical high or low output. The output for the logic circuit produces a redundant and fail-safe representation of the switch outputs. When both switch outputs are high, the output is high. Similarly, when both switch outputs are low, the logic circuit's output is low. When the output states of the two switches do not agree, the circuit resolves the conflict by memorizing the last output state which both switches were simultaneously in and produces the logical complement of this output state. Thus, the logic circuit of the present invention allows the redundant switches to be treated as if they were in parallel when the switches are open and as if they were in series when the switches are closed. A failsafe system having maximum reliability is thereby produced.

0252 EMI (Electromagnetic Interference) Filter Capacitor Unit
G. W. Miller, L. L. McClintock
Department of the Air Force, Washington, DC
Filed 14 Jun 83, patented 7 Aug 84 7p
PATENT-4 464 702 Available from Comm. of Patents
The unit comprises several rolled capacitor elements in a single case, with a package concept that allows installation mounting and electrical interconnection on the same top plane. A U-shaped feedthrough bus in the form of a wide metal strip is routed from a top input terminal down the center of the case and up adjacent one wall to a top output terminal. The capacitor elements are in two sets on opposite sides of the center portion of the feedthrough bus, and connected thereto. A ground bus serving as an internal noise partition connected to the metal top is between the capacitor elements of one set and the outer portion of the feedthrough bus. A minimum of three units may be used with the variable speed constant frequency (VSCF) converter of the three-phase power supply system of an aircraft, for filtering and suppression of electromagnetic interference. The construction permits use of two input terminals bussed together, and two output terminals bussed together for handling large currents.

0253 Energizing Arrangement for Charge Coupled Device Control Electrodes
E. S. Richards
Department of the Air Force, Washington, DC
Filed 24 Oct 84 32p
PAT-APPL-6-664 197 Available from NTIS: price code A03
A charge coupled device gate electrode bus driving arrangement which uses the properties of an electrical transmission line to achieve higher impedance, essentially reactive free, loading of the bus driver circuit is disclosed. The described gate electrode arrangement includes the addition of inductance elements, resistive terminations, and delay line considered placement of CCD cells to the usual CCD configuration; the disclosure includes numeric examples of the impedances and delay times incurred with the transmission line configuration.

Fast Switching Driver for Inductive Load, Such as a Phase Shifter
See 0194

0254 Filter Reflection Image Guide Oscillator and Solid State Line Scanning Device
H. Jacobs
Department of the Army, Washington, DC
Filed 13 Sep 84 30p
PAT-APPL-6-679 970 Available from NTIS: price code A03
This document describes a filter reflection image guide oscillator and a solid state line scanning device. The device includes a brass metal heat sink base on which a dielectric waveguide is mounted. A resonant cavity is defined in the dielectric waveguide and an oscillator diode, Gunn or IMPATT, for example, is located in the resonant cavity. The resonant cavity is enclosed by a metal cover with a post which is made to extend into the resonant cavity to contact one electrode of the oscillator diode. The top surface of the waveguide includes a perturbation surface consisting of parallel and spaced metal stripes which are laterally positioned along the length of the waveguide. The spacing of the metal stripes defines the function performed by the device. By changing the bias voltage of the oscillator diode or with the addition of a varactor with a separate DC bias source, the frequency in the waveguide can be changed and thus line scanning or beam steering is made possible.

0255 Frequency Selective Signals-to-Noise Enhancer/Limiter Apparatus
S. N. Stitzer
Department of the Air Force, Washington, DC
Filed 27 Nov 84 12p
PAT-APPL-6-675 171 Available from NTIS: price code A02
A signal-to-noise enhancer is disclosed which can be used in frequency memory loops to prevent loop capture by noise. If a frequency selective limiter is incorporated in the loop, more than one signal can be stored simultaneously because the limiter prevents the loop amplifier from saturating. At present, the limiter must be a separate device. The frequency selective signal-to-noise enhancer.limiter apparatus comprises an enhancer apparatus and a limiter apparatus and a limiter apparatus on a single substrate, using a single pair of magnets to bias both units.

0256 Frequency-Spreading Coupler
L. Young
Department of the Navy, Washington, DC
Filed 23 Sep 82, patented 29 Jan 85 8p
PATENT-4 496 876 Available from Comm. of Patents
Document describes a wide band travelling wave amplifier including an input waveguide coaxially disposed about an interaction waveguide. Both waveguides are tapered with the same direction of increasing cross-section. The interaction waveguide is a high-pass filter while the input waveguide is a low pass filter. The input waveguide is positioned relative to the interaction waveguide so that each cutoff plane in the input waveguide corresponding to a given frequency, omega(c), is displaced in the direction of increasing

cross-section from a cutoff plane in the interaction waveguide corresponding to omega(c) where omega(c) is any frequency in the frequency band of the amplifier. A slot, disposed between the cutoff planes corresponding to omega(c) couples the omega(c) frequency component of an input wave from the input waveguide to the interaction waveguide.

0257 Heat Sinking for Printed Circuitry
S. K. Wilson, G. Richardson, A. L. Pinkerton
Department of Energy, Washington, DC
Filed 11 Sep 84 8p
PAT-APPL-6-649 322 Available from NTIS: price code A02
A flat pak or other solid-state device mounted on a printed circuit board directly over a hole extends therethrough so that the bottom of the pak or device extends beyond the bottom of the circuit board. A heat sink disposed beneath the circuit board contacts the bottom of the pak or device and provides direct heat sinking thereto. Pressure may be applied to the top of the pak or device to assure good mechanical and thermal contact with the heat sink.

0258 Hermetic Chip Carrier Compliant Soldering Pads
P. F. Hemler
Department of the Air Force, Washington, DC
Filed 1 May 85 11p
PAT-APPL-6-729 389 Available from NTIS: price code A02
Compliant soldering pads allow for expansion and contraction between an hermetic chip carriers (HCC) and printed wiring boards (PWB) due to coefficient of thermal expansion mismatch and prevent solder cracking which in turn causes electrical discontinuities. The pads allow for flexing in three axes.

0259 High or Low-Side Solid State Relay with Current Limiting and Operational Testing
C. R. Dolland
Department of the Air Force, Washington, DC
Filed 11 Jul 84 15p
PAT-APPL-6-629 862 Available from NTIS: price code A02
The switch comprises a circuit from a first output terminal via parallel MOS devices in series with current-sensing resistance to a second output terminal, with alternative high-side and low-side configurations having a load between the second terminal and ground, or the first terminal and the DC supply voltage. An input terminal for a digital control signal is coupled via an input diode and two Schmitt Trigger CMOS inverters to a control lead for the gates of the switch. A current overload or short circuit protection circuit coupled between the current-sensor and the input diode comprises two transistors coupled by a diode. A built-in test circuit for indicating the switch condition (on, off, shorted or open) comprises MOS transistors having their gates connected to voltage dividers at the two output terminals, and their drains connected to discrete indication terminals.

0260 High Output Programmable Signal Current Source for Low Output Impedance Applications
D. G. Jablonski, R. W. Watkins
Department of the Navy, Washington, DC
Filed 10 May 85 10p
PAT-APPL-6-732 330 Available from NTIS: price code A02
The present invention relates to a high output programmable current source. Complementary output stages are connected between appropriate power supply polarities for driving a low impedance load which is connected to circuit ground. An operational amplifier is connected between the input and emitter of each of the complementary stages providing negative feedback for virtually eliminating in the input offset voltage of the respective output stage. A programmable function signal source is connected to the operational amplifiers for driving a programmable signal current to the extent possible through the load resistance from a limited voltage supply.

0261 High Switching Speed Electrically Tuned Microwave Magnetic Resonance Devices
G. T. Radio, C. Vittoria, J. M. Ferrari
Department of the Navy, Washington, DC
Filed 20 Dec 85 12p
PAT-APPL-6-684 207 Available from NTIS: price code A02
The present invention relates to a high speed tunable microwave cavity. More specifically the present invention relates to a microwave cavity loaded with a ferrite which exhibits the magneto-electric effect and that has a voltage applied across the ferrite which determines the resonance frequency of the cavity. Microwave beam shifting was originally produced by mechanical systems, or by a system of manifolding to distribute microwave energy to individual waveguide elements, where each element contains a phase shifter followed by an antenna transmitter. In the manifolded system, beam shifting is accomplished by applying electric currents to the phase shifters. The mechanical method of beam shifting is slow and readily subject to wear and malfunction. The manifolded method of beam shifting requires a considerable amount of space to accomplish power distribution and each consecutive phase shifter must shift a greater amount to maintain proper beam proportion, since phase shift is not additive or reciprocal.

0262 High Voltage Power Supply
A. P. Ruitberg, K. M. Young
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 6 Jul 83, patented 14 May 85 16p
PATENT-4 517 472 Available from Comm. of Patents
A high voltage power supply is formed by three discrete circuits energized by a battery to provide a plurality of concurrent output signals floating at a high output voltage on the order of several tens of kilovolts. In the first two circuits, the regulator stages are pulse width modulated and include adjustable ressistances for varying the duty cycles of pulse trains provided to corresponding oscillator stages while the third regulator stage includes an adjustable resistance for varying the amplitude of a steady signal provided to a third oscillator stage. In the first circuit, the oscillator, formed by a constant current drive network and a tuned resonant network included a step up transformer, is coupled to a second step up transformer which, in turn, supplies an amplified sinusoidal signal to a parallel pair of complementary poled rectifying, voltage multiplier stages to generate the high output voltage.

0263 Image Line Voltage Controlled Oscillator with Replaceable Components
R. E. Horn
Department of the Army, Washington, DC
Filed 27 Dec 84 17p
PAT-APPL-6-679 971 Available from NTIS: price code A02
A millimeter wavelength oscillator combining a mechanically tunable solid state diode element provides a basic stable

steady wave energy source with fine-tuning capabilities not possible with a resonating cavity oscillator alone, and with an apparatus structure which is light in weight, compact, mechanically sturdy, and with easily accessible and quickly replaceable component parts.

Instantaneous Frequency Measurement Receiver with Digital Processing
See 0563

0264 Integrated Circuit Tunable Cavity Oscillator
H. Jacobs
Department of the Army, Washington, DC
Filed 27 Dec 84 16p
PAT-APPL-6-679 969 Available from NTIS: price code A02
An integrated circuit tunable cavity oscillator is described for extremely high frequency operation in image line waveguide. The oscillator includes a metal base with a cylindrical bore, a dielectric or semiconductor waveguide mounted atop the metal base and having a bore which is continuous with the metal base bore. A Gunn or IMPATT diode is assembled in the metal base bore on top of a drum which is urged upwards toward the waveguide bore by a spring located behind the drum. From above, cavity tuning means including a top disk and a threaded screw cover the waveguide bore and push the diode into the metal base bore to define the cavity height of the coaxial cavity of the oscillator. The waveform, which is set up in the recessed cavity in the metal base, is launched into the waveguide. Thus, a ruggedized, low cost, tunable (by a tuning screw) and low weight oscillator for millimeter wave image line or microstrip operation is obtained. Furthermore, the oscillator diode and cavity defining hardware are easily replaceable.

0265 Integrated Varactor Tuned Coaxial Gunn Oscillator for 60 GHz Operation
J. W. Boyle
Department of the Army, Washington, DC
Filed 27 Dec 84 15p
PAT-APPL-6-679 974 Available from NTIS: price code A02
In general, the invention according to our concept comprehends a millimeter wave oscillator which comprises, in combination, a housing or base portion which is provided with a resonating cavity, a solid state mechanically tuneable element which is adjustably moveably disposed in the housing, conveniently by means of a threaded engagement in a brass collar or the like fitting secured to the housing, which tuneable element is capable of producing millimeter-wave energy output at a frequency corresponding to its position in the resonate cavity, and a solid state electronically tuneable element arranged and physically disposed concentrically with same. Position adjustment means are provided exterior of the housing and operably connect to the mechanically tuneable element. Mechanical means connect between the mechanically tuneable element and the exteriorly located position adjustment means, and an electrical bias source is provided for each of the tuneable elements.

0266 Lightweight Cladding for Magnetic Circuits
H. A. Leupold
Department of the Army, Washington, DC
Filed 24 Dec 84 21p
PAT-APPL-6-685 426 Available from NTIS: price code A02
This invention relates generally to the field of magnetic circuits for electronic devices, and more specifically to a magnetic circuit including a structure for magnetically cladding the circuit to eliminate undesirable exterior magnetic fields.

0267 Low Noise Multiple Crystal-Controlled Oscillator
M. M. Driscoll
Department of the Air Force, Washington, DC
Filed 29 Aug 84 20p
PAT-APPL-6-645 468 Available from NTIS: price code A02
An oscillator circuit utilizing multiple (two) quartz crystal resonators as the frequency controlling elements in a novel circuit arrangement. The use of two crystal units increases the oscillator circuit signal transmission group delay by a factor of 2 to 3 and effects an estimated 6dB reduction in oscillator output signal phase noise sideband level at carrier offset frequencies less than the resonator half-bandwidths. The degree of resonator tracking required is made practical with the use of temperature controlled SC-cut resonators. In addition, the oscillator circuit is configured so that equal, correlated output signal currents can be extracted from each resonator through individual load circuits, thereby increasing available oscillator output signal amplitude by 2:1 and reducing the net effect of uncorrelated load circuit additive noise by 3dB.

0268 Measurement Amplifier
F. E. Lukens
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 7 Aug 84 13p
PAT-APPL-6-638 584 Available from NTIS: price code A02
A high common mode rejection differential amplifier wherein two serially arranged Darlington amplifier stages are employed and any common mode voltage is divided between them by a resistance network is described. The input to the first Darlington amplifier stage is coupled to a signal input resistor via an amplifier which isolates the input and presents a high impedance across this resistor. The output of the second Darlington stage is transposed in scale via an amplifier stage which has in its input a biasing circuit which effects a finite biasing of the two Darlington amplifier stages.

Measurement of Permittivity and Permeability of Microwave Materials
See 0576

0269 Mechanical Locking between Multi-Layer Printed Wiring Board Conductors and Through-Hole Plating
E. Taylor
Department of the Air Force, Washington, DC
Filed 2 Oct 84 22p
PAT-APPL-6-657 097 Available from NTIS: price code A02
This invention relates to the field of electrical printed wiring board structure and to the manufacture of such boards. A plated through-hole conductor structure for a multiple layer laminate electronic printed wiring board includes mechanical locking of the plated through conductor with textured conductor surfaces together with use of etching or other processing to provide laminate internal space for the mechanical locking structure. A manufacturing sequence and plural material selections are also disclosed.

0270 Method and Apparatus for Generating Monopulse Ultrasonic Signals
R. A. Meyer, F. S. Howard, J. E. Brugger
Environmental Protection Agency, Washington, DC
Filed 24 Sep 82, patented 26 Mar 85 5p
PATENT-4 507 762 Available from Comm. of Patents
A method of transmitting half-sinewave ultrasonic monopulses utilizes a flip-flop to reverse the states of a bridge circuit ((Q sub 1) - (Q sub 4)) with each output pulse from a timing pulse generator. This reverses the polarity of a dc voltage which stresses a piezoelectric transducer to substantiate its limit. Each pulse from the timing generator thus causes one mechanical transition of the transducer and clamps it in its reversed stress condition, thereby producing a half-sinewave ultrasonic output for each timing pulse.

0271 Microwave Bandstop Filter
A. Ballato
Department of the Army, Washington, DC
Filed 9 May 85 126p
PAT-APPL-6-732 120 Available from NTIS: price code A07
An acoustic surface wave device is configured as a bandstop filter. The device has groups of sinusoidal corrugations cut into the top surface of a piezoelectric substrate between the input and output sets of interdigital transducers. The groups of corrugations selectively scatter certain surface acoustic wave spectral components traveling between the input and output transducers. The scattered components are converted to bulk vibration and do not impinge upon the output transducer; other components travel from input to output transducer relatively undiminished. Thus, a band of scattered surface acoustic spectral components is filtered from the input spectrum.

0272 Miniature High Performance Pulsed Modulator Apparatus
W. E. Milberger
Department of the Air Force, Washington, DC
Filed 22 Aug 84 13p
PAT-APPL-6-643 201 Available from NTIS: price code A02
A pulsed modulator apparatus having a ground deck clock driver unit to provide pulse stretching and on-off trigger signals for a floating deck transistor switch unit. Voltage isolation is achieved between the ground and floating deck units through the use of trigger transformers.

0273 Optically Triggered Transferred-Electron Device Microwave Burst and Single Pulse Generators
T. F. Carruthers, J. F. Weller, H. F. Taylor
Department of the Navy, Washington, DC
Filed 3 Feb 82, patented 6 Nov 84 11p
PATENT-4 481 485 Available from Comm. of Patents
Transferred-electron device (TED) microwave burst and single pulse generators which are triggered by pico-second optical pulses. The burst generator includes a TED having a cathode, an anode, and a gate electrode positioned therebetween, all located on a semiconductor substrate. An optical pulse applied to the substrate between the gate and anode electrodes causes a plurality of space charge domains to sequentially travel from the gate to the illuminated region thereby causing an oscillatory burst of current to occur in the external leads of the TED. The frequency of the burst is proportional to the distance between the gate and the illuminated region and the burst duration is proportional to the optical pulse amplitude and/or duration. Alternatively, the burst generators may be formed from a two terminal TED with the cathode electrode being treated as the gate. A single pulse generator may be formed by applying an optical pulse to the substrate between the cathode and the gate of a three terminal TED. The duration of the single pulse is proportional to the distance between the gate and the anode.

0274 Orthogonalizer for Inphase and Quadrature Digital Data
B. L. Lewis
Department of the Navy, Washington, DC
Filed 9 Jun 82, patented 18 Dec 84 5p
PATENT-4 489 392 Available from Comm. of Patents
This invention relates generally to radar systems and more particularly to methods and apparatus for correcting phase imbalances between inphase and quadrature channels of digital signal processing systems. Inphase and quadrature phase non-orthogonality (where by the term 'non-orthogonality' is meant correlation) has been a problem in digital signal processors such as adaptive moving target indicators (MTI) and coherent sidelobe cancellers. Adaptive interference cancelers are limited in the amount of interference they can cancel by the non-orthogonality of the inphase and quadrature data. An orthogonalizer is disclosed wherein a series of complex digital numbers is received, each number having correlated (non-orthogonal) real and imaginary parts; a weight is established which is a measure of the correlation; the product is formed of one of the parts of one of the received complex numbers with the weight; and the product is subtracted from the other part of the one received complex number to decorrelate (orthogonalize) the real and imaginery parts thereof.

0275 Phase Lock Acquisition System
S. P. Caldwell
Department of the Air Force, Washington, DC
Filed 6 Jun 84 19p
PAT-APPL-6-617 668 Available from NTIS: price code A02
The acquisition of phase lock to a reference frequency by a signal acquisition system is accomplished using a voltage controlled oscillator, a wideband frequency discriminator, a prepositioning circuit, and a phase lock loop. The voltage controlled oscillator is prepositioned within a loop bandwidth of the reference frequency by the preposition circuit and the wide band frequency discriminator which provide coarse turning. The voltage controlled oscillator achieves phase lock with the reference frequency when it receives the fine tune signal from the phase lock loop. Using total the discriminator and the phase look loop allows fast acquistion without the need to calibrater the voltage controlled oscillator. Since the discriminator pull-in range is much larger than the phase-lock loop bandwidth, the number of bits can be much smaller than in an acquisition circuit using a digital prepositioning circuit alone.

0276 Power Circuit Utilizing Self-Excited Hall Effect Switch Means
P. J. Turchi
Department of the Air Force, Washington, DC
Filed 23 Feb 83, patented 27 Nov 84 6p
PATENT-4 485 314 Available from Comm. of Patents
A power circuit utilizes a switch comprised of Hall-effect-active resistive elements for interrupting a current flow in an inductive energy storage system. Interruption of the flow of current causes a high-voltage pulse which drives the current flow into a circuit leg which is parallel to the interrupting elements. The Hall effect switch is controlled by means of an exciter coil that is connected in parallel with the Hall-

effect-active resistive elements to provide self excited operation.

Power Control for AC Motor
See 0312

0277 Precision Digital Sampler
J. P. Belton
Department of the Air Force, Washington, DC
Filed 8 Nov 78, patented 17 Apr 84 5p
PATENT-4 443 766 Available from Comm. of Patents
A precision digital sampler utilizes a sample rate clock providing pulses driving a tapped delay line where the total delay equals the Pulse Repetition Interval of the sample clock. The outputs of the tapped delay line are tied to a buffer register having a storage cell for each delay line tap. The data from the delay line is stored in the register on receipt of a command signal designated sample initiate command. In storing the outputs of the delay line, the state of the sample clock is known to the resolution of the taps. A decoder studies the states and the time for locating the leading edge of the sample clock is calculated. The calculated time is used by a control switching circuit to determine which tap should be enabled. The leading edge of the sample clock is thus enabled at the resolution of the delay line taps.

0278 Precision Linear Ramp Function Generator
W. B. Jatko, D. R. McNeilly, L. H. Thacker
Department of Energy, Washington, DC
Filed 1 Aug 84 9p
PAT-APPL-6-636 657 Available from NTIS: price code A02
A ramp function generator is provided which produces a precise linear ramp function which is repeatable and highly stable. A derivative feedback loop is used to stabilize the output of an integrator in the forward loop and control the ramp rate. The ramp may be started from a selected baseline voltage level and the desired ramp rate is selected by applying an appropriate constant voltage to the input of the integrator.

Printed Circuit Balun with a Dipole Antenna
See 0232

Printed Wiring Board Circuit Isolator Tool
See 0682

0279 Programmable Synchronous Digital Delay Line
T. J. Rehbein, W. Bonser
Department of the Air Force, Washington, DC
Filed 23 Jul 80, patented 28 Aug 84 17p
PATENT-4 468 624 Available from Comm. of Patents
A synchronous digital delay line that can be programmed by variable delay increments to independently delay the leading and trailing edges of a digital signal and that can be utilized to provide a wide range of digital delaying requirements. Bipolar input data is processed to develop a mark data pulse stream representing the leading edges of input data pulses and a space data pulse stream representing the trailing edges of input data pulses. Each data pulse stream is delayed separately by a programmable random access memory delay circuit and the delayed outputs are recombined by a line driver latch to provide output data pulses that are delayed, delayed and compressed, or delayed and stretched in accordance with the programmed delays and system requirements. The programmable random access memory delay circuits each comprise a random access memory used as a variable length register having an address counter operating as a ring counter. Delay is varied by altering the maximum address at which the address counter is reset and is the product of the address clock rate and the 3 number of bits of memory used. The length of delay, delay increments, and stability, therefore, are a function of the clock source, clock rate, and memory size.

0280 Protection Circuitry for High Voltage Drivers
G. H. Frank
Department of the Air Force, Washington, DC
Filed 6 Sep 83, patented 14 May 85 5p
PATENT-4 517 618 Available from Comm. of Patents
5Protection circuitry interposed between a power source and a load is arranged to gradually apply high voltage has attained a predetermined percentage of its nominal value. In the event that the load current exceeds a prescribed maximum limit, or in the absence of additional load voltages, the high voltage supply is disconnected from the load.

0281 Radiofrequency Amplifier Based on a DC Superconducting Quantum Interference Device
C. Hilbert, J. M. Martinis, J. Clarke
Department of Energy, Washington, DC
Filed 27 Apr 84 20p
PAT-APPL-6-604 547 Available from NTIS: price code A02
A low noise radiofrequency amplifer, using a dc SQUID (superconducting quantum interference device) as the input amplifying element. The dc SQUID and an input coil are maintained at superconductivity temperatures in a superconducting shield, with the input coil inductively coupled to the superconducting ring of the dc SQUID. A radiofrequency signal from outside the shield is applied to the input coil, and an amplified radiofrequency signal is developed across the dc SQUID ring and transmitted to exteriorly of the shield. A power gain of 19.5 /- 0.5 dB has been achieved with a noise temperature of 1.0 /- 0.4 K at a frequency of 100 MHz.

0282 Reactanceless Synthesized Impedance Bandpass Amplifier
L. L. Kleinberg
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 13 Oct 82, patented 4 Jun 85 8p
PATENT-4 521 702 Available from Comm. of Patents
An active R bandpass filter network is formed by four operational amplifier stages interconnected by discrete resistances. One pair of stages synthesize an equivalent input impedance of an inductance (L sub eq) in parallel with a discrete resistance (R sub o) while the second pair of stages synthesizes an equivalent input impedance of a capacitance (C sub eq) serially coupled to another discrete resistance (R sub i) coupled in parallel with the first two stages. The equivalent input impedances aggregately define a tuned resonant bandpass filter in the roll-off regions of the operational amplifiers.

0283 Reversing-Counterpulse Repetitive-Pulse Inductive Storage Circuit
E. M. Honig
Department of Energy, Washington, DC
Filed 5 Jun 84 23p
PAT-APPL-6-617 653 Available from NTIS: price code A02
A high power reversing-counterpulse repetitive-pulse inductive storage and transfer circuit includes an opening switch,

a main energy storage coil, a counterpulse capacitor and a small inductor. After counterpulsing the opening switch off, the counterpulse capacitor is recharged by the main energy storage coil before the load pulse is initiated. This gives the counterpulse capacitor sufficient energy for the next counterpulse operation, although the polarity of the capacitor's voltage must be reversed before that can occur. By using a current-zero switch as the counterpulse start switch, the capacitor is disconnected from the circuit (with a full charge) when the load pulse is initiated, preventing the capacitor from depleting its energy store by discharging through the load. After the load pulse is terminated by reclosing the main opening switch, the polarity of the counterpulse capacitor voltage is reversed by discharging the capacitor through a small inductor and interrupting the discharge current oscillation at zero current and peak reversed voltage. The circuit enables high-power, high-repetition-rate operation with reusable switches and features total control (pulse-to-pulse) over output pulse initiation, duration, repetition rate, and, to some extent, risetime.

RF-Primed High Power Halogen Vial Apparatus
See 0213

0284 Routing Method in Computer Aided Customization of a Two Level Automated Universal Array
D. C. Smith, R. Noto
Department of the Army, Washington, DC
Filed 2 Jul 85 56p
PAT-APPL-6-751 339 Available from NTIS: price code A04
This patent application pertains to a routing method implemented in the stored programs of a digital computer which is programmably operated to generate the wire interconnect masks for a two level metallization automated universal array having undefined roadbeds between rows of cells comprised of identical semiconductor device basic units which are futher interconnected to provide a particular integrated circuit structure. Conductor routing is provided by a computer aided design system that, among other things, carries out a route analysis process which determines in which roadbed each wire should be tentatively routed in conjunction with generating a routing density profile for minimizing congestion for a particular circuit design and when the roadbed density is exceeded, certain wires are removed under a set of criteria for routing by a pathfinder routing process. Following route analysis, detailed routing and rerouting is performed sequentially by a direct routing process, a greedy channel routing process, and a pathfinder routing process with rerouting being performed after each channel router and pathfinding process. Furthermore, the greedy channel routing process makes a single pass from left to right in all wires which cross successive points simultaneously and, if necessary, deleting a wire or wires which are then rerouted by the pathfiniding process.

0285 Sample Data Phase Locked Loop for Adaptive Doppler Tracker
A. W. Roeder
Department of the Air Force, Washington, DC
Filed 3 Dec 81, patented 23 Apr 85 9p
PATENT-4 513 429 Available from Comm. of Patents
Precise phase acquisition and tracking of a data modulated pulse signal in order to recover the data in a low signal to noise ratio environment is achieved by a sample data phase locked loop that is adaptive, second order, and uses baseband polar coordinate processing. The circuit utilizes an adaptive second order loop where the loop bandwidth can be adjusted by a coherence measurement. This provides wide bandwidths during initial acquisition, medium bandwidths during acquisition/track transition and narrow bandwidth during tracking.

0286 SAW Oscillator with Digital Compensation for the Temperature Related Frequency Changes
A. J. Slobodnik, R. D. Colvin
Department of the Air Force, Washington, DC
Filed 8 Apr 82, patented 18 Dec 84 14p
PATENT-4 489 289 Available from Comm. of Patents
The inherent temperature instability of surface acoustic wave (SAW) clock oscillators is improved by the use of a thermometer oscillator circuit that senses temperature changes in the SAW substrate. The thermometer oscillator is used in combination with a calibrated programmable read only memory and a logic circuit and provides frequency corrections to the clock oscillator. The basic device is an oscillator clock circuit using a SAW substrate having a dealy path orientation with good temperature stability. A second oscillator, the thermometer oscillator circuit, and the electronic compensation scheme are added in order to produce minimum temperature coefficient of delay over all temperatures in the range of interest. The thermometer oscillator delay path utilizes a high temperature coefficient of delay orientation of the same SAW substrate and at an appropriate angle to the clock oscillator delay path orientation. Its frequency of oscillation; is used as a highly accurate thermometer in order to control a correction signal applied to a variable phase shifter in the clock oscillator loop.

Series-Counterpulse Repetitive-Pulse Inductive Storage Circuit
See 0479

0287 Short Rise Time Intense Electron Beam Generator
C. L. Olson
Department of Energy, Washington, DC
Filed 16 Mar 84 14p
PAT-APPL-6-590 317 Available from NTIS: price code A02
A generator for producing an intense relativisitc electron beam having a subnanosecond current rise time includes a conventional generator of intense relativistic electrons feeding into a short electrically conductive drift tube including a cavity containing a working gas at a low enough pressure to prevent the input beam from significantly ionizing the working gas. Ionizing means such as a laser simultaneously ionize the entire volume of working gas in the cavity to generate an output beam having a rise time less than one nanosecond.

0288 Signal Analysis Receiver with Acousto-Optic Delay Lines
J. B. Y. Tsui
Department of the Air Force, Washington, DC
Filed 10 Jun 85 15p
PAT-APPL-6-742 825 Available from NTIS: price code A02
The system makes use of an interferometric Bragg cell for the time delays needed by the multiple antenna inputs in an angle-of-arrival (AOA) measurement system, for accurate measurements over wide bandwidths. A signal Bragg cell is modulated with a selected band of the EW signal environment, using a separate transducer coupled to each quadrant antenna element. A reference Bragg cell is modulated

with a chirp signal. Coherent light from a laser is split and directed to both the signal. Coherent light from a laser is split and directed to both the signal cell and the reference cell. The output light beams from the reference Bragg cell and signal Bragg cell are combined and focused onto photo detectors having a one-dimensional array for each quadrant antenna element. The reference and signals are hererodyned at the photo detectors, which results iln a channelized spectrall output with each channel at the same intermediate frequency (IF). The outputs of the photodectors are used by a phase comparison unit, cued by a frequency measurement receiver to the correct detectors, to provide the AOA measurement. (Patent applications)

0289 Simplified DC to DC Converter
R. P. Gruber
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 14 Apr 82, patented 7 Aug 84 9p
PATENT-4 464 710 Available from Comm. of Patents
A dc to dc converter which can start with a shorted output and which regulates output voltage and current is described. Voltage controlled switches directed current through the primary of a transformer the secondary of which includes virtual reactance. The switching frequency of the switches is appropriately varied to increase the voltage drop across the virtual reactance in the secondary winding to which there is connected a low impedance load. A starting circuit suitable for voltage switching devices is provided.

0290 Slot Line Tunable Bandpass Filter
E. A. Mariani, R. A. Stern
Department of the Army, Washington, DC
Filed 7 Aug 85 36p
PAT-APPL-6-763 161 Available from NTIS: price code A03
A tunable bandpass filter comprising a pair of slot line resonant cavities formed in a metallic film covering the planar surface of a ferrite substrate. A magnetic biasing field of variable magnitude is generated and applied through the ferrite substrate transversely across the slot line resonant cavities. The magnetic field operates to change the electrical length of the resonant cavities due to the fact that the magnetic permeability of the ferrite material changes with the applied field.

0291 Slow Wave Circuit with Shaped Dielectric Substrate
R. R. Moats
Department of the Air Force, Washington, DC
Filed 15 Nov 82, patented 14 Aug 84 11p
PATENT-4 465 988 Available from Comm. of Patents
The substrate is ladder shaped and is located between a serpentine metallic meander line conductor and a metallic ground plane. Conductive shields are disposed in slot-like openings of the substrate between adjacent parallel transverse segments of the meander line to decrease dispersion and increase the bandwidth to a full octave.

0292 Switch Debounce Circuit
F. A. Norris, D. J. Krile
Department of the Air Force, Washington, DC
Filed 22 Feb 83, patented 11 Jun 85 5p
PATENT-4 523 104 Available from Comm. of Patents
A circuit for eliminating transient pulses generated by bouncing mechanical contacts within a switch. A shift register accepts a series of binary input signals from the switch and propagates the signal out the register in parallel to a logic device for generating a resultant binary signal corresponding to the switch's debounced signal state.

0293 Switching Mixer
A. R. Hislop
Department of the Navy, Washington, DC
Filed 18 Jan 82, patented 8 Jan 85 4p
PATENT-4 492 960 Available from Comm. of Patents
An RF system is disclosed in which the input mixer of the system is also used as a switch to allow the local oscillator to be used as the transmitter oscillator. The switching mixer may also be used as an attenuator or signal modulator. A local oscillator is connected via a filter to a 90 3 db hybrid coupler. Two of the four ports of the hybrid coupler are coupled through impedance matching networks to reversely polarized mixer diodes. Bias circuits are connected to the mixer diodes for variaby adjusting the bias current to the mixer diodes to thereby adjust their reflection/absorption characteristics. A second filter is connected between the first filter and the hybrid coupler for extracting an intermediate frequency signal. A third filter is connected to the fourth port of the hybrid coupler and to the antenna of the RF system. The first and third filters pass RF and local oscillator signals and block IF signals.

0294 Switching Power Supply
A. M. Mihalka
Department of Energy, Washington, DC
Filed 5 Jun 84 39p
PAT-APPL-6-617 651 Available from NTIS: price code A03
The invention is a repratable capacitor charging, switching power supply. A ferrite transformer steps up a dc input. The transformer primary is in a full bridge configuration utilizing power MOSFETs as the bridge switches. The transformer secondary is fed into a high voltage, full wave rectifier whose output is connected directly to the energy storage capacitor. The transformer is designed to provide adequate leakage inductance to limit capacitor current. The MOSFETs are switched to the variable frequency from 20 to 50 kHz to charge a capacitor from 0.6 kV. The peak current in a transformer primary and secondary is controlled by increasing the pulse width as the capacitor charges. A digital ripple counter counts pulses and after a preselected desired number is reached an up-counter is clocked.

0295 Tally Cell Circuit
J. L. Burrows
Department of the Air Force, Washington, DC
Filed 22 Aug 84 13p
PAT-APPL-6-643 203 Available from NTIS: price code A02
Document describes a tally cell circuit for counting the number of logic al ones in an input signal utilizing a parallel-series combination of four Complementary Metal Oxide Semiconductor field effect transistors. The number of input ones in the input are expressed in a binary code at the output of the tally celll circuit.

0296 Temperature Sensitive Oscillator
L. L. Kleinberg
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 25 Apr 85 14p
PAT-APPL-6-727 035 Available from NTIS: price code A02
An oscillator circuit for sensing and indicating temperature by changing oscillator frequency with temperature com-

prises a programmable operational amplifier which is operated on the roll-off portion of its gain versus frequency curve and has its output directly connected to the inverting input to place the amplifier in a follower configuration. Its output is also connected to the non-inverting input by a capacitor with a crystal or other tuned circuit also being connected to the non-inverting input. A resistor is connected to the program input of the amplifier to produce a given set current at a given temperature, the set current varying with temperature. As the set current changes, the gain-bandwidth of the amplifier changes and, in turn, the reflected capacitance across the crystal changes, thereby providing the desired change in oscillator frequency by pulling the crystal. There is no requirement that a crystal employed with this circuit display either a linear frequency change with temperature or a substantial frequency change with temperature.

0297 Transistor Oscillator/Doubler

C. Rauscher
Department of the Navy, Washington, DC
Filed 5 May 83 31p
PAT-APPL-6-491 941 Available from NTIS: price code A03

A microwave transistor oscillator/doubler comprising an Field-Effect Transistor with Terminals G, D and S in combination with a coupling network connected to the terminals G, D and S and composed of microstrip lines with lengths equal to a quarter wavelength at the second harmonic of a fundamental frequency. The doubler further comprises a bias circuit for supplying appropriate voltages to the FET terminals, and an impedance coupler for coupling from the FET D-S terminals to a waveguide load. The coupling network optimizes feedback at the second harmonic between the D-S and G-S ports of the FET to prevent destructive harmonic feedback interaction with the desired signal while providing optimum conditions for feedback at the fundamental frequency. The bias circuit is connected to the coupling network and includes a second network of transmission line elements of lengths equal to a quarter wavelength at the fundamental in order to prevent dissipation of the fundamental frequency therein.

0298 Transmission Line Biased Coherent Array of Josephson Oscillators

J. E. Lukens, A. K. Jain, P. M. Mankiewich
Department of the Navy, Washington, DC
Filed 29 Apr 81, patented 28 Aug 84 6p
PATENT-4 468 635 Available from Comm. of Patents

A coherent array of Josephson oscillators is provided. Individual hysteresis-free Josephson junctions are longitudinally arranged in a gap of a central conductor in a line and have such a spacing as to substantially eliminate quasiparticle interactions. To provide a common frequency of operation, equal and opposite dc voltages are produced in adjacent pairs of the Josephson junctions by an arrangement of interlockingg dc SQUID's (Super-conductive Quantum Interference Device) connected to the longitudinal central conductor using microwave bias tees. Phase coherence for the array is provided by a rf current circulating in an inductive feedback path that loops between the ends of the array.

0299 Two-Dimensional Bulk Acoustic Wave Correlator-Convolver

B. A. Auld, D. W. Pettibone, J. D. Plummer
Department of the Air Force, Washington, DC
Filed 5 Apr 83, patented 11 Jun 85 7p
PATENT-4 523 293 Available from Comm. of Patents

A two-dimensional bulk acoustic wave correlator-convolver having an acoustic mirror positioned two focal lengths from an integrated circuit-acoustic transducer array. The image, rather than the Fourier transform, of the input spatial distribution is returned to the transducer array by the mirror.

0300 Wavelength Selective Demultiplexer Tuner

C. R. Husbands
Department of the Air Force, Washington, DC
Filed 25 Oct 83 15p
PAT-APPL-6-545 307 Available from NTIS: price code A02

A wavelength selective demultiplexer tuner having an optically transmissive body for receiving an input signal containing a plurality of different wavelengths and transmitting the signal therethrough. An electro-optic block of material is secured to the body of the tuner and a reflective grating or mirror is secured to the electro-optic block of material for redirecting through the body the input signal as a plurality of signals, each containing a different one of the wavelengths. By appropriately varying a voltage placed across the electro-optic block of material, the index of refraction of the block of material changes thereby altering the optical paths followed by the plurality of signals redirected through the body. In this manner, each of the signals containing a different one of the wavelengths can be selectively output from the body at different times and at the same, single location.

0301 Wide-Band Phase Locked Loop Amplifier Apparatus

F. W. Hopwood
Department of the Air Force, Washington, DC
Filed 18 Apr 85 16p
PAT-APPL-6-724 714 Available from NTIS: price code A02

A wide-band amplifier apparatus utilizing a low frequency and a high frequency phase lock loop to achieve low phase delay at the loop bandwidth. The bandwidth products of the low and high frequency loops are combined and applied to the voltage controlled oscillator to minimize phase delay and to achieve a more stable loop.

0302 Wideband SAW (Surface Acoustic Wave) Channellizer Using Slanted Array Input Transducer

E. A. Mariani, W. J. Skudera
Department of the Army, Washington, DC
Filed 25 Jun 85 11p
PAT-APPL-6-749 038 Available from NTIS: Not available NTIS

Acoustic signal processing apparatus for the frequency-partition processing of a wideband RF spectrum surface acoustic wave (SAW) input signal into a multiplicity of relatively narrowband individual contiguous acoustic wave output signals, utilizing a wideband, linearly-dispersive, slanted array input transducer arranged on a wave-conductive surface with multiple arrayed output transduceers, each frequency-responsive to a respective band of frequencies emanated from the imput transducer.

ELECTROTECHNOLOGY: Electromechanical Devices

0303 Brush and Commutator Segment Torquer Motor
J. W. Becker
Department of the Air Force, Washington, DC
Filed 11 Apr 85 11p
PAT-APPL-6-721 836 Available from NTIS: price code A02
This patent application discloses a non-continuous brush and commutator segment torquer motor having a single radial air gap. The motor can be placed on the opposite side of the gimbal center line of a payload. This arrangement minimizes torquer mass, as well as providing greater clearance for the gimbal payload to travel through larger angular excursions. Hence, all payload which are gimbal mounted, such as radar antennas, can be located closer to the gimbal center and can be driven through larger look angles.

0304 Closed Loop Electrostatic Levitation System
W. K. Rhim, M. M. Saffren, D. D. Elleman
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 29 Oct 82, patented 4 Jun 85 8p
PATENT-4 521 854 Available from Comm. of Patents
An electrostatic levitation system is described, which can closely control the position of objects of appreciable size. A plurality of electrodes surround the desired position of an electrostatically charged object, the position of the objects is monitored, and the voltages applied to the electrodes are varied to hold the object at a desired position. In one system, the object is suspended above a plate-like electrode which has a concave upper face to urge the object toward the vertical axis of the curved plate. An upper electrode that is also curved can be positioned above the object, to assure curvature of the field at any height above the lower plate. In another system, four spherical electrodes are positioned at the points of a tetrahedron, and the voltages applied to the electrodes are varied in accordance with the object position as detected by two sensors.

0305 Connector/Nitinol delta Contact Force Device
R. F. Kemka
Department of the Navy, Washington, DC
Filed 7 May 84 10p
PAT-APPL-6-607 477 Available from NTIS: price code A02
An electrical connector employs a pin and socket mechanism enclosed by a contact force device. The contact force device has a uniqueness so that after insertion of the pin in the socket with the device at a very low temperature is completed, the device is allowed to return to ambient temperature. The separation force of the pin and socket mechanism is much greater than the insertion force. The contact force device uses nitinol and takes advantage of its transformation temperature in shifting from austenite phase to martensite phase and vice-versa.

0306 Demountable Coaxial Electrical Connector for In-Line Amplifiers
R. J. Phillips
Department of the Navy, Washington, DC
Filed 17 Jan 84, patented 25 Jun 85 4p
PATENT-4 525 013 Available from Comm. of Patents
A flexible coaxial connector assembly is used on buoyant cable antenna systems. It comprises a retainer assembly that has threads mating with a bellows assembly. Components that mate in a flexible manner are enclosed by the bellows. An electrical wire passes through these flexible mating components and terminates in a contact pin. The contact pin mates with an amplifier contact socket assembly.

Electro-Expulsive Separation System
See 1103

0307 Electromechanical Switch
A. P. Antonuzzi
Department of the Air Force, Washington, DC
Filed 6 Sep 84 25p
PAT-APPL-6-647 781 Available from NTIS: price code A02
A hardened electromechancial switch is disclosed. When appropriate electrical contacts and pick-offs are aligned, four switches close. The possible number of switch combinations selectable are 4095 based upon a base eight counting system. The switch has a counter section and a memory section. The counter section uses an odometer like device based upon octal. Each counter wheel of the counter section has an electrical pick-off that interacts with the memory section. In the memory section, a plurality of octal numbers, four, are entered into and locked thereon such that each counter set disk, four, therein has one octal number thereon. Electrical contacts are placed on the counter set disks of the memory section and these touch the pick-offs of the counter wheels which will simultaneously close on the four contacts of the counter set disk in only one of the 4095 combinations noted above.

Elevator/Hatch Controller Platform Leveling Logic with Safety Features
See 0730

0308 Gas Recirculator for Acyclic Machines
T. F. Balsa
Department of the Navy, Washington, DC
Filed 28 May 85 9p
PAT-APPL-6-737 753 Available from NTIS: price code A02
The present invention relates to acyclic machines of the type using liquid metal collectors, and more particularly to an improvement for retaining the liquid metal in such machines. Radial type acyclic motors and generators generally include a metallic disk rotor rotating on a shaft between electromagnetic stator poles excited by field coils wound concentric with the shaft. Instead of solid brush, current collectors at the rotor periphery, liquid metal collectors are sometimes used to close the electrical current loop between the shaft and the rotor, and an inert pressurized cover gas fills the gaps between the rotating components and the stationary housing. A cover bas recirculator in an acyclic generator having liquid metal collectors for reducing entrainment of the liquid metal in the gas. Radial passages in the stator housing provide natural recirculating paths for the cover gas to flow radially outward along the sides of the rotor and return inwardly through the passages. Scoops or lips located inward of the liquid metal collector divert the outward gas flow into the passages to minimize contact of the gas with the liquid metal collector divert the outward gas flow into the passages to minimizes contact of the gas with the liquid metal.

0309 High Current Fiber Brush Collector and Method for Making Same
S. J. Scuro
Department of the Navy, Washington, DC
Filed 2 May 85 12p
PAT-APPL-6-729 761 Available from NTIS: price code A02
This patent application discloses an axial-type homopolar motor having high density, high current fiber brush collectors affording efficient, low contact resistance and low operating temperatures. The collectors include a ring of concentric rows of brushes in equally spaced beveled holes soldered in place using a fixture for heating the ring to just below the solder melting point and a soldering iron for the local application of additional heat at each brush. Prior to soldering, an oxide film is formed on the surfaces of the brushes and ring, and the bevels are burnished to form a wetting surface. Flux applied with the solder at each bevel removes to an effective soldering depth the oxide film on the brushes and the holes.

0310 High Voltage Disconnect Protection
D. Frank, E. Flemming
Department of the Air Force, Washington, DC
Filed 16 Nov 84 18p
PAT-APPL-6-672 239 Available from NTIS: price code A02
The apparatus comprises a high voltage disconnect and load isolation switch. During normal operations commercial power is conducted through a pair of contacts a and b to a load. When a high voltage (HV) component is detected by an HV pulse detector, a command from the HV detector opens a secondary power interrupter while simultaneously activating the opening of contacts a and b. A surge protector conducts some of the HV energy greater than the source, or commercial power, to ground. As contacts a and b open, HV ground probes are positioned at a slight distance (dielectric constant equal to the commercial power source) from these contacts. These probes provide a ground source for an HV component throughout the complete transition of contact b to the rest position, which will be at ground potential. There is now full isolation from the source of power supply.

0311 Multi-Row Connector with Ground Plane Board
J. C. Cunningham
Department of the Air Force, Washington, DC
Filed 6 Mar 85 12p
PAT-APPL-6-708 909 Available from NTIS: price code A02
The present invention relates to electrical connectors and particularly to a multi-row connector having a printed circuit ground plane board associated therewith for grounding the outer shields of conductors at the connector. This patent application discloses a multi-row connector having a ground plane board mounted between rows of connector pins on the backside of the connector. Conductor shields of individual wires are soldered directly to conductor strips on the printed circuit ground plane board, and the strips are jumpered to a grounding pin on the connector.

0312 Power Control for AC Motor
R. W. Dabney
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 14 Jun 83, patented 18 Dec 84 8p
PATENT-4 489 264 Available from Comm. of Patents
A motor controller employing a triac through which power is supplied to a motor is described. The open circuit voltage appearing across the triac controls the operation of a timing circuit. This timing circuit triggers on the triac at a time following turn off which varies inversely as a function of the amplitude of the open circuit voltage of the triac.

Solar Powered Actuator with Continuously Variable Auxiliary Power Control
See 0441

0313 Three-Phase Power Factor Controller with Induced EMF Sensing
F. J. Nola
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 16 Dec 82, patented 4 Sep 84 10p
PATENT-4 469 998 Available from Comm. of Patents
A power factor controller for an ac induction motor is provided which is of the type comprising thyristor switches connected in series with the motor, phase detectors for sensing the motor current and voltage and providing an output proportional to the phase difference between the motor voltage and current, and a control circuit, responsive to the output of the phase detector and to a power factor command signal, for controlling switching of the thyristor. The invention involves sensing the induced emf produced by the motor during the time interval when the thyristor is off and for producing a corresponding feedback signal for controlling switching of the thyristor. The sensed emf is also used to enhance soft starting of the motor.

Variable Length and Sensor Spacing Thermistor Array,
See 0649

ELECTROTECHNOLOGY: Resistive, Capacitive, & Inductive Components

0314 Acceleration Insensitive Oscillator
F. L. Walls, J. R. Vig
Department of the Army, Washington, DC
Filed 25 Mar 85 17p
PAT-APPL-6-715 862 Available from NTIS: price code A02
This invention related generally to improvements in the acceleration sensitivity of quartz crystal oscillators and more particularly to the elimination of acceleration-induced frequency shifts in such oscillators. A crystal oscillator, including two crystals of unequal acceleration sensitivity magnitude and mounted such that their respective acceleration sensitivity vectors are aligned in an anti-parallel relationship, further includes at least one electrical reactance, such as a variable capacitor, coupled to one of the crystals for providing cancellation of acceleration sensitivities. After the acceleration sensitivity vectors of the two crystals are aligned anti-parallel. The variable capacitor is adjusted until the net or resultant acceleration sensitivity vector of the pair of resonators is reduced to zero. A second electrical reactance, such as a variable capacitor, is utilized as a tuning capacitor for adjusting the oscillator's output frequency to the desired level, while maintaining the cancellation of acceleration sensitivities.

0315 Acceleration Resistant Combination of Opposite-Handed Piezoelectric Crystals
J. R. Vig, A. D. Ballato
Department of the Army, Washington, DC
Filed 19 Oct 79, patented 10 Aug 82 5p
PATENT-4 344 010 Available from Comm. of Patents

An acceleration resistant crystal features two crystals mounted together with at least two axes of each crystal being in antiparallel relationship with respect to corresponding axes of the other crystals. The two crystals can be chiral pairs and thus have three corresponding axes in antiparallel relationship for acceleration resistance in any arbitrary direction with respect to the crystal axes.

0316 Acceleration Sensitivity Reduction Method
J. R. Vig, R. L. Filler
Department of the Army, Washington, DC
Filed 18 Oct 82, patented 29 May 84 3p
PATENT-4 451 755 Available from Comm. of Patents
The acceleration sensitivity of an AT-cut quartz crystal plate resonator is reduced by replacing the quartz crystal plate of the resonator with a quartz crystal plate having a flatter plate contour.

0317 Acceleration-Resistant Crystal Resonator
R. L. Filler
Department of the Army, Washington, DC
Filed 17 Jun 82, patented 18 Oct 83 4p
PATENT-4 410 822 Available from Comm. of Patents
A crystal resonator features two crystals mounted such that the acceleration sensitivity vector of one crystal is in an antiparallel relationship to the acceleration sensitivity vector of the other crystal. The composite resonator eliminates acceleration-induced frequency shifts for acceleration in all directions.

0318 Apparatus for Mounting a Field Emission Cathode
B. T. Ebihara, R. Forman
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 9 May 85 9p
PAT-APPL-6-732 321 Available from NTIS: price code A02
A field emission cathode is positioned in a pair of intersecting cross grooves, in the end of a ceramic tube by a metal end cap. A spring in electrical contact with the base of the cathode provides the necessary pressure to maintain continuous circumferential electrical contact between the gate film and a raised edge on the end cap. With this structure the cathode chip is self centering and easily replaceable. Also the gate film of the cathode is not abraded or rubbed during installation, and the holder is readily degassed.

0319 Apparatus for Unilateral Generation of a Homogeneous Magnetic Field
E. Fukushima, A. R. Rath, S. B. W. Roeder
Department of Energy, Washington, DC
Filed 1 May 84 19p
PAT-APPL-6-605 950 Available from NTIS: price code A02
An apparatus for unilaterally producing a substantially homogeneous magnetic field. The apparatus includes two circular electromagnet coils, a small coil and a large coil, which are coaxial with one another and which are separated by a distance equal to one-half the difference in the radius of the two coils. By appropriate selection of electrical currents, which are passed through the coils in opposite directions, a region of homogeneous magnetic field is formed. This region is centered on the common axis of the two coils, at a point on the axis which is at a distance from the small coil equal to one-half the radius of the small coil, and which is on the opposite side of the small coil from the large coil. The apparatus has particular application in the field of diagnostic medical NMR and other NMR applications.

0320 Cut Angles for Quartz Crystal Resonators
A. Kalan
Department of the Air Force, Washington, DC
Filed 26 May 83, patented 12 Feb 85 19p
PATENT-4 499 395 Available from Comm. of Patents
The present invention concerns itself with crystallographically doubly rotated quartz orientations vibrating in the transverse c-mode with turnover temperatures which are considerably less sensitive to angular misorientation than the comparable well known AT- or BT-cuts. These crystals are arbitrarily designated as AK-cut crystals and are defined by phi-angle variations between 30 deg.-60 deg, and theta-angle variations between 12 deg.-32 deg. The turnover temperatures of these resonators are between 60 deg. C and 200 deg. C.

0321 Cylindrical Crystal Resonator
A. Ballato
Department of the Army, Washington, DC
Filed 11 Feb 85 37p
PAT-APPL-6-700 573 Available from NTIS: price code A03
Improvement of resonator circuit parameters, unwanted mode suppression, and the frequency-temperature characteristic of a crystal resonator is provided by a doubly cut crystal resonator plate having at least one major face including a cylindrical contour, the axis of which is parallel to the direction of the projection of the eigenvector (the normal coordinate) for the desired operating mode. The cylinder axis is at an angle to the doubly rotated electrical axis such that the fast shear b mode is suppressed while the slow shear c mode is unaffected. The radius of the cylinder is selectively chosen for altering the frequency-temperature characteristic.

0322 Dielectric Resonator
A. Ballato
Department of the Army, Washington, DC
Filed 11 Feb 85 24p
PAT-APPL-6-699 990 Available from NTIS: price code A02
This invention relates generally to signal oscillators and more particulary to microwave and millimeter wave oscillators comprised of dielectric resonators. A method and means for producing a zero temperature coefficient for providing frequency stabilization as well adjusting the frequency at a particular temperature of a dielectric resonator element mounted on a substrate and having a dielectric disc affixed to the top of the resonator element. A zero temperature coefficient is obtained by selectively choosing the thickness of the dielectric disc depending upon the temperature coefficients of the constituent material of both the disc and resonator element. The operating frequency at a given temperature is furthermore adjusted by including two mutually contiguous patterns of metallization on the top surface of the resonator element and the bottom surface of the dielectric disc and thereafter rotating the disc so that a predetermined percentage of overlap between the two patterns exists.

EMI (Electromagnetic Interference) Filter Capacitor Unit
See 0252

0323 High Efficiency Electron Beam Gun Foil Support
J. P. O'Loughlin
Department of the Air Force, Washington, DC
Filed 17 Oct 84 26p
PAT-APPL-6-661 549 Available from NTIS: price code A03
The reduction of the grazing angle of electrons in an electron gun with a cathode emitting a beam of electrons which pass through a thin foil into a chamber, is accomplished by geometrically tailored electron gun foil supports. One embodiment of the invention replaces the conventional rectangular shaped ribs with a set of triangular shaped ribs which produce a grazing angle. Another embodiment of the tailored foil supports entails the addition of triangular shaped caps to existing rectangular shaped ribs. The resultant reduction of the grazing angle of electrons improve the transmission efficiency of the electron gun and reduces the heat buildup on the supports and foil.

0324 High Voltage Isolation Transformer
C. H. Clatterbuck, A. P. Ruitberg
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 21 Jun 83, patented 9 Apr 85 8p
PATENT-4 510 476 Available from Comm. of Patents
A high voltage isolation transformer is provided with primary and secondary coils separated by discrete electrostatic shields from the surfaces of insulating spools on which the coils are wound. The electrostatic shields are formed by coatings of a compound with a low electrical conductivity which completely encase the coils and adhere to the surfaces of the insulating spools adjacent to the coils. Coatings of the compound also line axial bores of the spools, thereby forming electrostatic shields separating the spools from legs of a ferromagnetic core extending through the bores. The transformer is able to isolate a high constant potential applied to one of its coils, without the occurrence of sparking or corona, by coupling the coatings, lining the axial bores to the ferromagnetic core and by coupling one terminal of each coil to the respective coating encasing the coil.

0325 Improved Magnetic Bias and Delay Linearity in a Magnetostatic Wave Delay Line
K. K. Jin
Department of the Air Force, Washington, DC
Filed 24 Oct 84 33p
PAT-APPL-6-664 193 Available from NTIS: price code A03
A cascade combination of magnetostatic delay line elements operating in different signal propagation modes for the purpose of achieving dispersion cancellation: magnetic bias control of the attained frequency-dependent delay and a magnetic bias field establishing apparatus for providing the tubular, laminar magnetic flux needed for backward volume wave operation of a magnetostatic delay element are also included.

0326 Interdigital Schottky Barrier Capacitor Apparatus
R. W. Bierig
Department of the Air Force, Washington, DC
Filed 7 May 85 19p
PAT-APPL-6-731 223 Available from NTIS: price code A02
The present invention relates broadly to Schottky barrier capacitors, and in particular to an interdigital Schottky barrier capacitor apparatus. In the prior art, the Schottky barrier diode is rather well known. In general, a Schottky barrier device comprises a semiconductor substrate layer that is formed by a first layer of heavily doped materials and a second layer of lightly doped materials upon which a layer of barrier metal is deposited thereon. The maximum reverse bias voltage which can be appplied to the Schottky barrier device is determined by the thickness of the lightly doped layer of semiconductive material which is deposited upon the substrate layer. This is only one of the factors that determined the reverse bias voltage, When a guardring is diffused into the lightly doped layer of semiconductive substrate material, the thickness of the layer is reduced, and therefore, the reverse bias voltage that can be applied to the Schottky device is reduced.

0327 Lightweight, Broadband Rayleigh Wave Transducer
M. B. Moffett
Department of the Navy, Washington, DC
Filed 27 Dec 82, patented 31 Jul 84 7p
PATENT-4 462 256 Available from Comm. of Patents
A broadband angle-beam transducer system for producing and/or receiving Rayleigh waves on the surface of a metal medium comprises a thickness mode piezoelectric polymer transducer element embedded within and impedance matched to a plastic wedge. The transducer element is oriented at an angle determined to be the critical angle for Rayleigh waves in the metal structure to be tested. As a transmitter, the transducer element generates discrete dilatational wave pulses, one of which propagates within the plastic wedge to the plastic face in contact with the metal structure. At this face some of the wave energy is reflected as dilatational and shear waves within the wedge and the remainder of the wave energy passes through a coupling medium into the metal structure producing a Rayleigh wave traveling along the surface of the structure. When the system is used as a receiver, a Rayleigh wave propagating on the surface of the metal structure is received by the polymer element which then generates a voltage proportional to the Rayleigh waveform.

Low Noise Polycrystalline Semiconductor Resistors by Hydrogen Passivation
See 0708

0328 Method and Apparatus for the Pressing and Alignment of Radially Oriented Toroidal Magnets
H. A. Leupold, E. Potenziani, J. Klimek, A. Tauber
Department of the Army, Washington, DC
Filed 21 Mar 85 21p
PAT-APPL-6-714 602 Available from NTIS: price code A02
A method and apparatus for pressing magnetic powder in a toroidal-shape while in a radial magnetic field. A magnetic flux is produced and carried by a die rod through the axial center of toroidally-shaped magnetic powder. An annular portion coaxially surrounding the die and magnetic powder is connected to a yoke member which carries the magnetic flux back to the magnetic flux producing means. This completes the magnetic circuit, and creates a radial magnetic field across the toroidally-shaped magnetic powder between the die rod and the annular portion. This radial magnetic field aligns the granauls of the toroidally shaped magnetic powder during pressing.

0329 Method for Predicting the Performance of Cathode Materials
G. A. Haas, A. Shih, C. R. K. Marrian
Department of the Navy, Washington, DC
Filed 2 May 83, patented 8 Jan 85 5p
PATENT-4 492 866 Available from Comm. of Patents
This invention pertains to a method for predicting the proclivity of various materials to emit electrons, and thus their suitability for cathode fabrication. The method includes steps to determine the surface work function lowering by analyzing and comparing the Auger electron-energy spectra of a plurality of sample materials.

0330 Method of Fabricating Acceleration Resistant Crystal Resonators and Acceleration Resistant Crystal Resonators so Formed
A. Ballato, J. R. Vig
Department of the Army, Washington, DC
Filed 14 Oct 80, patented 21 Dec 82 5p
PATENT-4 365 182 Available from Comm. of Patents
An acceleration resistant crystal resonator is made from a single quartz plate that is optically twinned into a left-handed (LH) quartz portion and a right-handed (RH) quartz portion. According to the method, the optically twinned single quartz plate is formed into a resonator plate wherein the effective thickness of the (LH) portion is substantially the same as the effective thickness of the (RH) portion. The resonator plate is then mounted and bonded to the support structure of a crystal resonator enclosure. A pair of electrodes is then deposited onto the (LH) portion and a pair of electrodes deposited onto the (RH) portion. The thickness of the two pairs of electrodes is then adjusted so that the resonant frequency of the resonator on the (LH) portion is substantially the same as the resonant frequency of the resonator on the (RH) portion. The pairs of electrodes are then interconnected to each other and to an oscillator circuit so that in-phase vibration of the two portions is assured. The enclosure is then hermetically sealed.

0331 Method of Heating Quartz Resonators
J. A. Kosinski
Department of the Army, Washington, DC
Filed 14 Dec 84 9p
PAT-APPL-6-681 733 Available from NTIS: price code A02
A quartz crystal resonator is heated by mounting and plating the resonator within an enclosure wherein the inner wall of the enclosure bears a reflective coating. Heating elements are positioned within the enclosure so as to be spaced from the resonator. The enclosure is then evacuated and sealed and a current caused to flow in the heating elements.

0332 Microwave Resonator Using Lateral Excitation
A. Ballato
Department of the Army, Washington, DC
Filed 24 Oct 84 16p
PAT-APPL-6-664 267 Available from NTIS: price code A02
An improvement in piezoelectric crystal resonators using lateral excitation whereby energy of vibration trapped in a region between the electrodes is provided by the inclusion of recessed electrodes adjacent a relatively raised piezoelectric region on at least one major face of surface of the crystal. The recessed electrodes oppose one another in either a horizontal or a vertical direction to generate a lateral field in the body of the crystal upon excitation. Additionally, curved edge interfaces are provided between the recessed electrodes and the piezoelectric crystal material to reduce field gradients. Tapered electrodes which have the effect of increasing the energy trapping in the gap between the electrodes are also disclosed.

0333 Microwave SAW (Surface Acoustic Wave) Monochromator
A. Ballato
Department of the Army, Washington, DC
Filed 24 May 85 134p
PAT-APPL-6-737 627 Available from NTIS: price code A07

Moisture Absorbing Anti-Arcing Coating and Method For Applying Same
See 0762

0334 Monochromatic Radio Frequency Accelerating Cavity
S. Giordano
Department of Energy, Washington, DC
Filed 9 Feb 84 23p
PAT-APPL-6-578 406 Available from NTIS: price code A02
A radio frequency resonant cavity having a fundamental resonant frequency and characterized by being free of spurious modes. A plurality of spaced electrically conductive bars are arranged in a generally cylindrical array within the cavity to define a chamber between the bars and an outer solid cylindrically shaped wall of the cavity. A first and second plurality of mode perturbing rods are mounted in two groups at determined random locations to extend radially and axially into the cavity thereby to perturb spurious modes and cause their fields to extend through passageways between the bars and into the chamber. At least one body of lossy material is disposed within the chamber to damp all spurious modes that do extend into the chamber thereby enabling the cavity to operate free of undesired spurious modes.

0335 Normal Coordinate Monolithic Crystal Filter
A. Ballato
Department of the Army, Washington, DC
Filed 7 Nov 84 13p
PAT-APPL-6-669 147 Available from NTIS: price code A02
The foregoing and other objects of the invention are provided by the method and means for reducing the undesired mode couplings, improper phase and insertion loss responses as well as compensating for stress and transient temperature effects on the SC cut of quartz, for example, by aligning the electrode length, including the sides thereof, fabricated on the surfaces of the crystal plate along the direction of projection of the eigenvector (the normal coordinate), and, in the case of trapped energy monolithic filter, arranging the electrode gap so that the gap is perpendicular to the eigenvector projection. For the SC cut of quartz operating in the shear mode (c-mode) the projection angle of the eigenvector as well as the direction of the electrodes is at an angle of approximately 8.2 degrees from the X' axis of the doubly rotated cut.

Piezoelectric Transducer Using Electrically Poled Gamma-Phase Nylon 11
See 0829

Polysilane Positive Photoresist Materials and Methods for Their Use
See 0830

0336 Process of Synthesizing Mixed BaO-TiO2 Based Powders for Ceramic Applications
J. J. Ritter, R. S. Roth, T. Negas
Department of Commerce, Washington, DC
Filed 15 Nov 84 24p
PAT-APPL-6-671 539 Available from NTIS: price code A02
A process for producing any desired Ba/Ti mixture to be formulated as an amorphous solid which crystallizes at very low temperatures to yield a desired phase or phases is disclosed. The process yields products free of undesirable impurities and allows macroscopic production of certain phases in the bariatitania system, having exceptional high frequency dielectric properties, that were previously unattainable through solid-state high temperature production techniques.

0337 Stress Compensation Crystal Device
A. Ballato
Department of the Army, Washington, DC
Filed 10 Jan 85 28p
PAT-APPL-6-690 358 Available from NTIS: price code A03
This invention relates generally to piezoelectric crystal devices and more particularly, to high frequency, high precision quartz crystals used in applications in which shock, acceleration, and temperature stresses are present. This patent application describes a stress compensated quartz piezoelectric resonator disk. The resonator contains a thin resonator center disk and a thicker integral concentric peripheral support ring. Roughly pie-slice portions of the inner disk are cut away. The remaining bridges between the resonant disk and support ring are positioned and sized in accord with crystallographic theory so that forces applied to the support ring will not change the reasonant frequency of the disk.

0338 Suppression of Vibration Effects on Piezoelectric Crystal Resonators,
V. J. Rosati
Department of the Army, Washington, DC
Filed 28 Jan 82, patented 5 Jun 84 5p
PATENT-4 453 141 Available from Comm. of Patents
An active method and apparatus for suppressing or cancelling the effects of vibration on quartz crystal controlled oscillators by generating an electrical signal which is a replica of the vibration acting on the crystal resonator, which signal is thereafter properly phased and applied directly to the crystal electrodes which thereby operates to substantially eliminate unwanted vibration-induced sidebands in the signal output of the oscillator.

Suspension Method of Impregnating Active Material into Composite Nickel Plaque
See 0787

ELECTROTECHNOLOGY: Semiconductor Devices

Apparatus and Method for the Horizontal, Crucible-Free Growth of Silicon Sheet Crystals
See 1082

Apparatus for Etching Vertical Junction Solar Cell Wafers
See 0698

Buried Junction Enhanced Schottky Barrier Device
See 0167

Electron Beam Enhanced Surface Modification for Making Highly Resolved Structures
See 0701

0339 Field-Effect Transistor Having a Superlattice Channel and High Carrier Velocities at High Applied Fields
R. J. Chaffin, L. R. Dawson, I. J. Fritz, G. C. Osbourn, T. E. Zipperian
Department of Energy, Washington, DC
Filed 19 Apr 84 27p
PAT-APPL-6-602 109 Available from NTIS: price code A03
In a field-effect transistor comprising a semiconductor having therein a source, a drain, a channel and a gate in operational relationship, there is provided an improvement wherein said semiconductor is a superlattice comprising alternating quantum well and barrier layers, the quantum well layers comprising a first direct gap semiconductor material which in bulk form has a certain bandgap and a curve of electron velocity versus applied electric field which has a maximum electron velocity at a certain electric field, the barrier layers comprising a second semiconductor material having a bandgap wider than that of said first semiconductor material, wherein the layer thicknesses of said quantum well and barrier layers are sufficiently thin that the alternating layers constitute a superlattice having a curve of electron velocity versus applied electric field which has a maximum electron velocity at a certain electric field, and wherein the thicknesses of said quantum well layers are selected to provide a superlattice curve of electron velocity versus applied electric field whereby, at applied electric fields higher than that at which the maximum electron velocity occurs in said first material when in bulk form, the electron velocities are higher in said superlattice than they are in said first semiconductor material in bulk form.

0340 Heterojunction Schottky Gate Mesfet with Lower Channel Ridge Barrier
R. F. Greene
Department of the Navy, Washington, DC
Filed 14 Sep 83, patented 12 Feb 85 8p
PATENT-4 499 481 Available from Comm. of Patents
This invention relates to an FET with an extremely short channel formed by the apex of a substrate ridge structure protruding upward through the channel layer toward a Schottky-barrier gate contact. The device is formed by etching a modulation-doped substrate to form an upwardly protruding ridge with the apex modulation-doped. A semiconductor layer is then disposed over the substrate surface with the protruding ridge to obtain an epitaxial interface therebetween. Source and drain regions are doped into the semiconductor layer on opposite sides of the ridge structure. Finally, ohmic contacts are formed on the semiconductor layer over the source and drain regions and a Schottky-barrier metalization is deposited on the semiconductor layer above the ridge structure. This device has a very short channel, a low transit time, a low gate capacitance, and an enhanced transconductance.

0341 Inelastic Tunnel Diodes
L. M. Anderson
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 19 Apr 83, patented 13 Nov 84 7p
PATENT-4 482 779 Available from Comm. of Patents
Power is extracted from plasmons, photons, or other guided electromagnetic waves at infrared to midultraviolet frequen-

cies by inelastic tunneling in metal-insulator-semiconductor-metal diodes. Inelastic tunneling produces power by absorbing plasmons to pump electrons to higher potential. Specifically, an electron from a semiconductor layer absorbs a plasmon and simultaneously tunnels across an insulator into metal layer which is at higher potential. The diode voltage determines the fraction of energy extracted from the plasmons; any excess is lost to heat.

Interdigital Schottky Barrier Capacitor Apparatus
See 0326

Low Defect, High Purity Crystalline Layers Grown by Selective Deposition
See 1088

Low Noise Polycrystalline Semiconductor Resistors by Hydrogen Passivation
See 0708

0342 Low Stress Semiconductor-Insulator Interface for Cryogenic Device Applications
G. Sherrill, R. J. Mattauch
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 10 Jan 85 8p
PAT-APPL-6-690 284 Available from NTIS: price code A02
The problem of GaAs device degradation at cryogenic temperatures at the interface of a GaAs device layer and openings in an overlying SiO2 passivation layer is addressed. This problem is solved by providing a semi-insulating GaAs passivation layer epitaxially grown on the underlying GaAs device layer. This structure provides a lattice-matched passivation layer not subject to severe mechanical stress at cryogenic temperatures.

LPE (Liquid Phase Epitaxy) Semiconductor Material Transfer Method
See 0710

Method and Apparatus for Measuring Minority Carrier Lifetime in a Direct Band-Gap Semiconductor
See 0580

0343 Method for Producing High Quality Germanium-Germanium Nitride Interfaces for Germanium Semiconductors and Device Produced Thereby
M. N. Yoder
Department of the Air Force, Washington, DC
Filed 22 Mar 85 7p
PAT-APPL-6-714 779 Available from NTIS: price code A02
The present invention relates to the production of a stable insulator of a germanium and a device produced thereby. A germanium substrate is provided with a layer of silicon nitride deposited on one of the outer surfaces. Ionized nitrogen is implanted by an ion beam into the silicon nitride layer. An electric field is applied across the substrate and layer are annealed while maintaining the electric field, the electric field is removed, and a second annealing step grows the germanium nitride insulator layer subcutaneously. In another embodiment the subcutaneous germanium nitride layer is grown during a single annealing step by continued application of the electric field to the substrate and the layer.

Method of Characterizing Critical Timing Paths and Analyzing Timing Related Failure Modes in Very Large Scale Integrated Circuits
See 0588

0344 Method of Examining Microcircuit Patterns
S. F. Suszko
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 13 Oct 83 19p
PAT-APPL-6-541 526 Available from NTIS: price code A02
Examination of microstructures of LSI and VLSI devices is facilitated by employing a method in which the device is photographed through a darkfield illumination optical microscope and the resulting negative subjected to inverse processing to form a positive on a photographic film. The film is then developed to form photographic prints or transparencies which clearly illustrate the structure of the device. The entire structure of a device may be examined by alternately photographing the device and selectively etching layers of the device in order to expose underlying layers.

0345 Modulation Doped GaAs/AlGaAs Field Effect Transistor
M. B. Das
Department of the Air Force, Washington, DC
Filed 27 Jun 85 24p
PAT-APPL-6-749 368 Available from NTIS: price code A02
To realize a depletion-mode modulation-doped field-effect transistor with high gate-length to depletion-depth ratio that is capable of providing high power gain at millimeter-wave frequencies, an ohmic gate or a heterojunction gate is used on the n-AlGaAs/GaAs layered structure, replacing the prior art Shottky-barrier metal gate. The depletion-mode operation is desirable for analog signal amplifying circuits as opposed to the enhancement-mode device commonly used for switching or digital circuits. In the case of Schottky-barrier gate, high aspect ratio structures naturally operate in the enhancement mode, hence the need for the change in the gate electrode structure.

0346 Monolithic Planar Doped Barrier Limiter
S. Dixon, T. R. AuCoin, R. J. Malik
Department of the Army, Washington, DC
Filed 25 Feb 85 11p
PAT-APPL-6-705 267 Available from NTIS: price code A02
This patent application describes a passive millimeter wave image guide power limiter comprising a length of dielectric transmission line or waveguide for millimeter wave frequencies located on a relatively thin conductive ground plane forming thereby an image guide and including a planar doped barrier diode structure formed in the dielectric transmission line with the planar doped barrier structure being integrally grown in a slot milled in the constituent material, i.e. gallium arsenide, of the waveguide transversely across the width dimension thereof so as to be orientated perpendicular to the flow of RF power being propagated along its length dimension. The planar doped barrier structure becomes conductive at a predetermined power level to reflect any further incident RF power back toward the power source.

Nondestructive Noncontact Device to Characterize Semiconductor Material
See 0600

0347 Parallel Programmable Charge Domain Device
T. L. Vogelsong
Department of the Air Force, Washington, DC
Filed 7 Dec 84 19p
PAT-APPL-6-679 327 Available from NTIS: price code A02
Ths patent application discloses programmable signal processing apparatus for multiplying a sampled analog signal by a multiple bit digital word coefficient. All signal processing operations are accomplished by the splitting, routing and combining of charge packets formed in a charge domain device.

0348 Pipelined Programmable Charge Domain Device
T. L. Vogelsong
Department of the Air Force, Washington, DC
Filed 7 Dec 84 19p
PAT-APPL-6-679 332 Available from NTIS: price code A02
This patent application discloses programmable signal processing apparatus for multiplying a sampled analog singal by a multiple bit digital word coefficient. All signal processing operations are accomplished by the splitting, routing and combining of charge packets formed in a charge domain device.

0349 Planar Doped Barrier Semiconductor Device
R. J. Malik
Department of the Army, Washington, DC
Filed 23 Mar 81, patented 18 Oct 83 8p
PATENT-4 410 902 Available from Comm. of Patents
Disclosed is a majority carrier rectifying barrier semi-conductor device housing a planar doped barrier. The device is fabricated in GaAs by an epitaxial growth process which results in an n/-i-p/-i-n/ semiconductor structure wherein an extremely narrow p/ planar doped region is positioned in adjoining regions of nominally undoped (intrinsic) semiconductive material. The narrow widths of the undoped regions and the high densities of the ionized impurities within the space charge region results in rectangular and triangular electric fields and potential barriers, respectively. Independent and continuous control of the barrier height and the asymmetry of the current vs. voltage characteristic is provided through variation of the acceptor charge density and the undoped region widths. Additionally, the capacitance of the device is substantially constant with respect to bias voltage.

Process for Improving the Quality of Epitaxial Silicon Films Grown on Insulating Substrates
See 0723

Process for Making a Heterojunction Source-Drain Insulated Gate Field-Effect Transistors Utilizing Diffusion to Form the Lattice
See 0724

0350 Radiation Hardened Ion-Implanted GaAs Field Effect Transistor and Method for Making the Same Specification
E. E. King, W. T. Anderson
Department of the Navy, Washington, DC
Filed 18 Jul 83 18p
PAT-APPL-6-514 891 Available from NTIS: price code A02
The present Invention is directed to a novel gallium arsenide field effect transistor and, more particularly, to a novel gallium arsenide field effect transistor which exhibits greatly improved tolerance to the effects of pulsed ionizing radiation.

0351 Selective Anodic Oxidation of Semiconductors for Pattern Generation
B. Davari
Department of the Air Force, Washington, DC
Filed 1 Nov 84 31p
PAT-APPL-6-667 306 Available from NTIS: price code A03
The present invention relates to GaAs integrated circuit technology, and in particular, to a novel means of controlling oxidation growth rate on anodically oxidized GaAs samples. This abstract discloses and apparatus and a method for selectively controlling anodic oxide growth on semiconductors for controlled electrochemical pattern generation incorporating use of a writing beam of a wavelength with encourages oxide and a bias beam at a wavelength which discourages oxide growth. The bias beam is projected on the semiconductor in electrolytic environment to prevent or retard oxide growth while oxide growth is accelerated at points of illumination by means of writing beam.

0352 Self-Aligned GaAs FET with Low 1/f Noise
J. E. Davey
Department of the Navy, Washington, DC
Filed 7 Mar 85 23p
PAT-APPL-6-709 476 Available from NTIS: price code A02
A self-aligned GaAs FET is described with an active channel which is unaffected by surface charge trapping/emission. The device comprises a channel of n-doped GaAs, a source and drain regions of n(/) GaAs layer having open first and second end surfaces disposed at opposite ends of the channel, a semi-insulating GaAs layer disposed over the channel, with this GaAs having open first and second end surfaces disposed at an angle of greater than or equal to 45 deg relative to the channel plane. A cavity is disposed in the GaAs layer exposing a portion of the channel, and a gate metallization is disposed over the GaAs layer and extending form the first end surface to the second end surface of the GaAs layer and directly contacting the exposed portion of the channel region in the cavity to form a Schottky barrier contact. This gate metallization is not disposed in contact with a significant portion of either of the first and second end surfaces. The ends of the gate metallization overhang slightly the end surfaces of the GaAs layer in order to provide masking to maintain the first and second end surfaces open during fabrication. An insulator such as air may be disposed in contact with these end surfaces.

Simultaneous Doped Layers for Semiconductor Devices
See 1022

Superlattice Ultrasonic Wave Generator
See 1069

0353 TiW Diffusion Barrier for AuZn Ohmic Contacts to P-Type InP
J. B. Boos, N. A. Papanicolaou, T. H. Weng
Department of the Navy, Washington, DC
Filed 27 Jun 85 27p
PAT-APPL-6-749 238 Available from NTIS: price code A03
This abstract discloses a low metal resistance ohmic contact alloyed to p InP material having TiW within the contact as a diffusion barrier layer between an underlay of AuZn and an overlay of Au. A process for fabricating an InP JFET containing a gate contact of respective AuZn, TiW, and Au layers and with the gate contact alloyed to p InP material of a semiconductive gate region provides an improved InP

JFET having a low resistance metal alloyed ohmic contact to the gate region. Use of the TiW layer in a multilayer contact alloyed to p InP material leads to unique processing and improved InP Semiconductor devices.

0354 Two Carrier Dual Injector Apparatus
D. J. DiMaria, H. N. Kotecha
Department of the Air Force, Washington, DC
Filed 6 May 81, patented 18 Sep 84 4p
PATENT-4 472 726 Available from Comm. of Patents
A two carrier dual injector semiconductor apparatus utilies a pair of injector gates for simultaneously injecting holes and electrons into a series stack of insulator layers. The stacked insulator layers which may be arranged in a MIM or MIS configuration have injecting layers near opposing metal gates for injecting either electrons or holes into the insulator layers depending upon the polarity of the applied bias voltage. The apparatus is capable of high-current low-voltage carrier injection while maintaining a stable trapped spaced charge within the stack of insulator layers.

ELECTROTECHNOLOGY: Other

Advanced Cube Processor
See 1029

0355 Amplitude and Phase Modulation in Fin-Lines Electrical Tuning
C. Vittoria
Department of the Navy, Washington, DC
Filed 17 Jun 83, patented 19 Mar 85 6p
PATENT-4 506 234 Available from Comm. of Patents
A fin-line waveguide device for modulating signals passing therethrough. The device comprises a fin-line waveguide including two channel members longitudinally extending in the direction of signal propagation through the device. The channel members are physically and electrically separated by a ferrite dielectric slab which is oriented in a longitudinally extending plane parallel to the electric field lines of the signal passing through the device. A magnetic field is applied to the ferrite slab to magnetically bias the slab to ferromagnetic resonance. A voltage is applied across the ferrite slab to alter the ferromagnetic resonance characteristics of the slab. The phase and amplitude of the signal processing through the waveguide are modulated in response to the applied voltage.

0356 Atomically Mixed Alloy Coated Cathodes Specification
G. A. Haas, A. Shih, C. R. K. Marrian
Department of the Navy, Washington, DC
Filed 4 Apr 85 20p
PAT-APPL-6-719 403 Available from NTIS: price code A02
The present invention pertains generally to cathodes used in thermionic electron tubes, often used in ultra high frequency and microwave radio transmitters. It is an object of this invention to produce thermionic tube cathodes which consistntly exhibit current densities higher than heretofore achieved. Another object of the present invention is to manufacture cathodes using a method that consistently results in cathodes with a large, defined, level of current density. Another object of the present invention is to produce cathodes with reduced surface work functions by means of atomic scale mixing of two selected metals in a cathode surface coating. A tungsten or tungsten-based matrix cathode impregnated with BaO is simultaneously coated with vapors of two metallic elements, in particular, tungsten and iridium, such that a binary alloy forms on the surface. A layer of BaO then spontaneously dispenses onto the surface of the binary alloy. One of the metallic elements associates with the oxygen of BaO and other with the barium. The molecular dipole of BaO thus becomes more pronounced, and the surface work function results in a greater rate of electron emission from the cathode.

Attachment Method-Ceramic Radome to Metal Body
See 0699

0357 Automatic Pattern Recognition Apparatus
W. J. King
Department of the Navy, Washington, DC
Filed 5 Jul 84 16p
PAT-APPL-6-627 939 Available from NTIS: price code A02
This invention relates to a display correlator system, but more particularly, it relates to a multipurpose automatic pattern recognition apparatus that makes use of both optical templation and signal correlation techniques. By using liquid crystal panels, charge coupled device type cameras, video storage techniques, inter alia, to detect and identify electronic signal patterns transmitted thereto. The apparatus is also configured to detect pattern changes and image object movement.

0358 Broad-Band Beam Buncher
D. A. Goldberg, W. S. Flood, A. A. Arthur, F. Voelker
Department of Energy, Washington, DC
Filed 20 Mar 84 24p
PAT-APPL-6-591 651 Available from NTIS: price code A02
A broad-band beam buncher is disclosed, comprising an evacuated housing, an electron gun therein for producing an electron beam, a buncher cavity having entrance and exit openings through which the beam is directed, grids across such openings, a source providing a positive DC voltage between the cavity and the electron gun, a drift tube through which the electron beam travels in passing through such cavity, grids across the ends of such drift tube, gaps being provided between the drift tube grids and the entrance and exit grids, a modulator for supplying an ultrahigh frequency modulating signal to the drift tube for producing velocity modulation of the electrons in the beam, a drift space in the housing through which the velocity modulated electron beam travels and in which the beam is bunched, and a discharge opening from such drift tube and having a grid across such opening through which the bunched electron beam is discharged into an accelerator or the like. The buncher cavity and the drift tube may be arranged to constitute an extension of a coaxial transmission line which is employed to deliver the modulating signal from a signal source. The extended transmission line may be terminated in its characteristic impedance to afford a broad-band response and the device as a whole designed to effect broad-band beam coupling, so as to minimize variations of the output across the response band.

0359 CCD (Charge-Coupled Device) Gaussian Convolution Method
R. J. Donahue
Department of the Air Force, Washington, DC
Filed 13 Oct 83 18p
PAT-APPL-6-541 820 Available from NTIS: price code A02
A Gaussian convolution is produced in a CCD (Charge-Coupled Device) imager or shift register by a method involving

a special clocking sequence. The principle of operation, analagous to the process of diffusion, involves the deliberate intermixing of adjacent charge packets in a controlled way. Amounts of charge are exchanged between adjacent pixels a number of times, the result approximating the convolution of the image with a Gaussian function whose width is dependent upon the number of mixing cycles. (Patent applications)

Charge Isolation in a Spatial Light Modulator
See 1032

0360 Coaxial Test Fixture
W. F. Praeg
Department of Energy, Washington, DC
Filed 30 Mar 84 22p
PAT-APPL-6-595 014 Available from NTIS: price code A02
This invention pertains to arrangements for performing electrical tests on contact material samples, and in particular for testing contact material test samples in an evacuated environment under high current loads. Frequently, it is desirable in developing high-current separable contact material, to have at least a preliminary analysis of selected candidate conductor materials. Testing of material samples will hopefully identify materials unsuitable for high current electrical contact without requiring incorporation of the materials into a completed and oftentimes complex structure.

0361 Collective Interaction Klystron Specification
Y. Y. Lau
Department of the Air Force, Washington, DC
Filed 28 Jan 85 22p
PAT-APPL-6-695 327 Available from NTIS: price code A02
A collective interactive klystron that utilizes a bent drift tube to achieve circular motions of the electrons in the drift region. This bent drift tube eliminates material repulsion between AC space charges in a klystron. Except for the bending of the drift tube and the electric or magnetic means to bend the orbits of the electrons inside the drift tube as specified above, for all intents and purposes, the input cavity, the output cavity, the means to couple the rf energy into (and out of) these cavities, and the electron source may be in the same dimension and material, as in the conventional klystrons, at the corresponding parameters in beam voltage, beam current, and the frequencies of the signal.

Device for Controlling Optical Fiber Twist on a Bobbin
See 1033

Differentiating Spatial Light Modulator
See 1034

Electro-Optic Harmonic Conversion to Switch a Laser Beam Out of a Cavity
See 1038

0362 Electrochromic Display Device
M. M. Nicholson
Department of the Air Force, Washington, DC
Filed 19 Jul 84 35p
PAT-APPL-6-632 179 Available from NTIS: price code A03
This invention relates to electrochromic devices. In one aspect it relates to electrically controllable display devices. In another aspect it relates to electrically tunable optical or light filters. In yet another aspect it relates to a chemical sensor device which employs a color changing film. There are many uses for electrically controllable display devices. A number of such devices have been in commercial use for some time. These display devices include liquid crystal displays, light emitting diode displays, plasma displays, and the like. Light emitting diode displays and plasma display panels both suffer from the fact that they are active. Light emissive devices which require substantial power for their operation, In addition, it is difficult to fabricate light emitting diode displays in a manner which renders them easily distinguishable under bright ambient illumination. Liquid crystal displays suffer from the disadvantage that they are operative only over a limited temperature range and have substantially no memory within the liquid crystal material.

Electron-Bombarded Silicon Spatial Light Modulator
See 1039

0363 Electronic Imaging System and Technique
J. O. Bolstad
Department of Energy, Washington, DC
Filed 12 Jun 84 17p
PAT-APPL-6-619 759 Available from NTIS: price code A02
A method and system for viewing objects obscurred by intense plasmas or flames (such as a welding arc) includes a pulsed light source to illuminate the object, the peak brightness of the light reflected from the object being greater than the brightness of the intense plasma or flame; an electronic image sensor for detecting a pulsed image of the illuminated object, the sensor being operated as a high-speed shutter; and electronic means for synchronizing the shutter operation with the pulsed light source.

Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040

0364 Extended Precision in Video Bandwidth Analog to Digital Converter Using Optical Techniques
H. F. Taylor
Department of the Navy, Washington, DC
Filed 28 Mar 85 19p
PAT-APPL-6-717 365 Available from NTIS: price code A02
Two interferometric electro-optic modulators formed from single mode waveguides in a single crystal substrate of pockels (linear) electro-optic material is used in conjunction with optical sampling techniques and conventional Analog-to-Digital technology to convert analog signals to a binary representation.

Fault Finder
See 0537

0365 Gyrotron Traveling-Wave Device Including Quarter Wavelength Anti-Reflective Dielectric Layer to Enhance Microwave Absorption
K. J. Kim
Department of the Navy, Washington, DC
Filed 19 Oct 82, patented 15 Jan 85 8p
PATENT-4 494 039 Available from Comm. of Patents
A gyrotron traveling-wave device includes quarter wavelength anti-reflective dielectric layers to enhance microwave absorption. A drift tube made from a hollow waveguide is positioned within the gyrotron to surround an electron beam passing from an electron gun to a cavity. A plurality of parallel highly lossy dielectric suppressor rings are interspaced with a plurality of conductive rings positioned to surround the electron beam and located within the waveguide. An anti-reflective layer is formed on the suppressor rings of ra-

diation due to parasitic oscillations by reducing reflections of incident radiation from the suppressor rings. In an alternate embodiment, one or more suppressor rings including an anti-reflect ing layer are located within the cavity.

0366 Heat Resistant Sheathed Insulated Electrical Conductors
F. L. Merritt, A. C. Ducati
Department of the Air Force, Washington, DC
Filed 22 Dec 83, patented 12 Feb 85 4p
PATENT-4 499 334 Available from Comm. of Patents
The leads to a heater for an electrothermal hydrazine monopropellant thruster comprise tungsten conductors wrapped with smaller diameter tungsten support wire and insulated with beads of alumina (Al2O3). A transition section connects the leads to regular leads. An attaching support wire is attached to the heater at one end and to the transition section at the other end. The insulated conductors and attaching wire are wrapped together with nickel ribbon to form a sheath.

High Efficiency Electron Beam Gun Foil Support
See 0323

0367 High Voltage RF Coaxial Cable
R. J. Tippie
Department of the Air Force, Washington, DC
Filed 11 Oct 84 10p
PAT-APPL-6-659 920 Available from NTIS: price code A02
A high voltage coaxial cable wherein a corona-free configuration is produced by applying a room temperature-cured silicone elastomeric material under pressure to the outer surface of the cable braid so that the material is forced between the voids of the braid and adheres to the primary insulation material at the insulation/braid interface.

Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
See 1047

0368 Improved Real-Time Ultra-High Resolution Image Projection Display Using Laser-Addressed Liquid Crystal Light Valve
J. Trias
Department of the Navy, Washington, DC
Filed 22 Aug 84 20p
PAT-APPL-6-643 216 Available from NTIS: price code A02
This invention relates to large screen displays for presenting images to a number of viewers. More particularly this invention concerns a large screen display capable of operating in real-time at high resolution rates and the presentation of video information. In still greater particularity this invention provides for an electronic driven acousto-optic modulation of a coherent beam and its acousto-optic deflection in the X-direction and Y-directon to enable higher resolution portrayal of information at video rates on a remote screen.

0369 Integrated Wavelength Demultiplexer
R. E. Reedy
Department of the Navy, Washington, DC
Filed 1 Jul 85 28p
PAT-APPL-6-750 630 Available from NTIS: price code A03
An optical wavelength demultiplexer is fabricated as an integral part of an integrated circuit chip. A waveguide in a common substrate having a chirped diffraction grating receives a number of wavelengths of optically modulated data from a single mode fiber. The wavelengths are diffracted from the plane of the lines of the grating into discrete beams at discrete angles through the substrate and impinge on appropriately located photodetectors. Signals provided by the detectors are fed to an processed by other integrated circuitry also contained on the chip. The common transparent substrate such as fused silica, glass, sapphire, lithium niobate or lithium tantalate mount semiconductor films of Si, Ge GaAs or quaternary alloys that have the detectors and other integrated circuitry that are created by conventional CVD techniques. The waveguide and appropriate chirp grating are formed by established deposition and photolithographic procedures to assure the separation of as many as fifty discrete beams of as many different wavelengths and their projection onto a like number of photodetectors to provide for a heretofore unattainable degree of optical wavelength demultiplexing.

0370 Length Dependent, Optical Time Delay/Filter Device for Electrical Signals
R. Soref
Department of the Air Force, Washington, DC
Filed 6 Feb 85 27p
PAT-APPL-6-698 977 Available from NTIS: price code A03
In this patent application, a length dependent, optical time delay/filter device for electrical signals having a single integrated optical switching circuit and only two optical time delay components connected thereto. The optical time delay components are each made up of a plurality of optical fibers of varying lengths. Depending upon which fibers an optical signal (converted from an incoming electrical signal) passes through determines the time of travel of the optical signal through the device. This optical signal is then converted back into an electrical output signal which is as a result thereof, time delayed/filtered.

Maintenance Port System
See 0129

0371 Matrix Display Simulation
G. G. Kuperman
Department of the Air Force, Washington, DC
Filed 14 Aug 84 43p
PAT-APPL-6-640 624 Available from NTIS: price code A03
Document describes a system for simulating the display of visual images by a matrix of liquid crystal cells or other matrix elements and providing flexibility in selecting display characteristics such as element size, active area ratio, and signal noise content. The display preferably employs a cathode ray tube and uses software signal processing.

Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
See 1054

Measurement of Visual Contrast Sensitivity
See 0922

0372 Metallized Synthetic Cable
T. E. Jones
Department of the Navy, Washington, DC
Filed 18 Apr 84 23p
PAT-APPL-6-601 751 Available from NTIS: price code A02
The present invention is directed to providing a method of fabricating an essentially neutrally buoyant undersea data communications link and a suitable apparatus therefor. At least one continuous synthetic fiber is provided having a diameter of between eight and ten microns, a weight of be-

tween 1.75 and 2.2 grams per cubic centimeter and a tensile strength in the range of 200,000 to 400,000 lbs/sq. in. Coating each continuous fiber with a metallized layer to a one to three micron thickness provides the low resistance data pathway. A dielectric insulation covers the coated fibers, protects them and insulates them from the surrounding seawater which can function as an electrical return path or a metal sheath is provided on the outside of the dielectric insulation for that purpose. A prime object of the invention is to provide an improved data transmission cable.

0373 Method to Improve Superconductor Cable
A. R. Borden
Department of Energy, Washington, DC
Filed 8 Mar 84 26p
PAT-APPL-6-587 437 Available from NTIS: price code A03
A method is disclosed of making a stranded superconductor cable having improved flexing and bending characteristics. In such method, a plurality of superconductor strands are helically wound around a cylindrical portion of a mandrel which tapers along a transitional portion to a flat end portion. The helically wound strands form a multistrand hollow cable which is partially flattened by pressure rollers as the cable travels along the transitional portion. The partially flattened cable is impacted with repeated hammer blows as the hollow cable travels along the flat end portion. The hammer blows flatten both the internal and the external surfaces of the strands. The cable is fully flattened and compacted by two sets of pressure rollers which engage the flat sides and the edges of the cable after it has traveled away from the flat end portion of the mandrel. The flattened internal surfaces slide easily over one another when the cable is flexed or bent so that there is very little possibility that the cable will be damaged by the necessary flexing and bending required to wind the cable into magnet coils.

0374 Mode Dependent, Optical Time Delay System for Electrical Signals
A. Yang
Department of the Air Force, Washington, DC
Filed 6 Feb 85 23p
PAT-APPL-6-698 721 Available from NTIS: price code A02
This patent application discloses a mode dependent, optical time delay system for electrical signals having a highly multi-mode optical fiber having a step index profile in optical alignment with an optical source which is capable of converting an incoming electrical signal into an optical signal. By incorporating within the system a number of different components to alter or control the mode angles of the incoming optical signal, the resultant optical output signal is time delayed as it propagates through the optical fiber. This optical output signal is thereafter converted into an electrical output signal which is also time delayed in direct relation to the mode angle of the optical signal propagating through the optical fiber.

0375 Multiconductor Flat Cable
E. A. Escallier, S. R. Dawson, J. M. Shaheen
Department of the Air Force, Washington, DC
Filed 7 Mar 84, patented 26 Feb 85 6p
PATENT-4 501 929 Available from Comm. of Patents
A multiconductor flat cable incorporates an approximately right angle turn in its conductor runs. The right angle turn is provided by first securing the conductor runs in a desired spacing through a first lamination of insulation cover and base sheets while leaving portions of the conductor runs exposed through a window in the first lamination. THe first lamination is then severed at the lateral edges of the window so that the end portion of the first lamination may be moved ninety degrees relative to a remaining body portion thereto. The right angle turn is then secured by forming a second lamination with cover and base layers so as to overlap the first lamination and the turn in the conductor runs.

0376 Multistrand Superconductor Cable
A. R. Borden
Department of Energy, Washington, DC
Filed 8 Mar 84 12p
PAT-APPL-6-587 438 Available from NTIS: price code A02
Improved multistrand Rutherford-type superconductor cable is produced by using strands which are preformed, prior to being wound into the cable, so that each strand has a variable cross section, with successive portions having a substantially round cross section, a transitional oval cross section, a rectangular cross section, a transitional oval cross section, a round cross section and so forth, in repetitive cycles along the length of the strand. The cable is wound and flattened so that the portions of rectangular cross section extend across the two flat sides of the cable at the strand angle. The portions of round cross section are bent at the edges of the flattened cable, so as to extend between the two flat sides. The rectangular portions of the strands slide easily over one another, so as to facilitate flexing and bending of the cable, while also minimizing the possibility of causing damage to the strands by such flexing or bending. Moreover, the improved cable substantially maintains its compactness and cross-sectional shape when the cable is flexed or bent.

Optical Correlator
See 1060

Optical Fiber Coupling Method and Apparatus
See 1061

0377 Optical Injection Locking of Solid-State Oscillators by Frequency-Multiplexed Injection-Locked, Laser Diodes
H. F. Taylor, L. Goldberg, C. Rauscher, J. F. Weller
Department of the Navy, Washington, DC
Filed 28 Sep 83, patented 5 Mar 85 5p
PATENT-4 503 403 Available from Comm. of Patents
The optical injection-locking of an FET oscillator is accomplished by injecting the beat signal between two coherently mixed slave lasers, which are locked to different harmonics of a modulated master laser, into the FET oscillator to be locked. 120 GHz injection-locking beat signals are possible using this technique.

Optoelectronic Integrated Circuit Multiplier
See 1066

0378 P-N Junction Controlled Field Emitter Array Cathode
R. F. Greene, H. F. Gray
Department of the Navy, Washington, DC
Filed 23 Sep 82, patented 23 Apr 85 11p
PATENT-4 513 308 Available from Comm. of Patents
A Field Emitter Array comprising a semiconductor substrate with an emitter surface formed thereon. A plurality of emitter pyramids is disposed on the emitter surface for emitting an electron current. The magnitude of the electron current

emitted by each emitter pyramid I max, is controlled by a reverse-biased p-n junction associated with each emitter pyramid where I max = j sat X A p-n, j sat being the saturation current density and A p-n being the area of the reverse-biased p-n junction associated with each emitter pyramid. A grid, positively biased relative to the emitter surface and the emitter pyramids, is disposed above the emitter surface for creating a electric field that induces the emission of the electron current from the emitter tips.

0379 Particle Trap for Compressed Gas Insulated Transmission Systems

A. H. Cookson
Department of Energy, Washington, DC
Filed 26 Apr 84 30p
PAT-APPL-6-604 352 Available from NTIS: price code A03

A particle trap is provided for gas insulated transmission lines having a central high voltage conductor supported within an outer coaxial conductive sheath by a dielectric support member. A cavity between the inner conductor and outer sheath is filled with a dielectric insulating gas. A cone-like particle deflector, mounted to the inner conductor, deflects moving particles away from the support member, to radially outer portions of the cavity. A conductive shield is disposed adjacent the outer sheath to form a field-free region in radially outer portions of the cavity, between the shield and the sheath. Particles traveling along the cavity are deflected by the cone-like deflector into the field-free region where they are held immobile. In a vertical embodiment, particles enter the field-free region through an upper end of a gap formed between shield and sheath members. In a horizontal embodiment, the deflector cone has a base which is terminated radially internally of the shield. Apertures in the shield located adjacent the deflector allow passage of deflected particles into the field-free region. The dielectric support member is thereby protected from contaminating particles that may otherwise come to rest thereon.

Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch

See 0035

0380 Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure

R. K. Cernius, D. M. French, P. A. Singer, D. J. Adrian, D. I. Parsons
Department of the Navy, Washington, DC
Filed 24 Jun 82, patented 4 Sep 84 12p
PATENT-4 470 022 Available from Comm. of Patents

A reliable, repeatable and stable VLF/LF atmospheric noise generator is capable of producing noise with known or givem amplitude probability distributions and temporal characteristics such as pulse duration, pulse spacing, pulses per unit time and the discharge fine structure between pulses. A pseudo random noise carrier signals is multiplied in a plurality of digital-to-analog converters with the discharge envelopes created in a plurality of interconnected discharge envelope generators. The discharges are representative of cloud-to-ground discharges, intercloud discharges, the discharge rate, strokes per discharge and the discharge fine structure. All of the discharges are readily modifiable by suitably reprogramming operatively coupled memories and microprocessors in accordance with selected loading instructions.

0381 Quasi-Optical Harmonic Gyrotron and Gyroklystron

W. Manheimer, B. Levush
Department of the Navy, Washington, DC
Filed 12 Jul 84 33p
PAT-APPL-6-630 049 Available from NTIS: price code A03

A method and apparatus for suppressing lower order cyclotron harmonics in order to permit resonance within a quasi-optical gyrotron/gyroklystron configuration of a desired higher order harmonic. In the gyrotron/gyroklystron configuration at least one open resonator defined by at least two mirrors is positioned downstream from an electron beam source for receiving therethrough the beam of electrons and for exchanging energy therewith. This method includes the steps of choosing a mirror radius size rho for the mirrors forming the at least one open resonator which is large enough relative to the spot size of a desired radiation cyclotron harmonic omega (m) so that the harmonic omega (n) oscillates within the at least one resonator, but small enough so that the spot size for the next lower cyclotron harmonic omega (m) is larger than the mirror so that the harmonic omega (m) does not oscillate due to diffraction losses.

0382 Quasioptical Gyroklystron

W. M. Manheimer, E. Ott, A. Bondeson
Department of the Navy, Washington, DC
Filed 2 Sep 82, patented 1 Jan 85 5p
PATENT-4 491 765 Available from Comm. of Patents

A quasioptical gyroklystron for generating high power quasioptical (millimeter) radiation. A mildly relativistic electron beam gyrating in a static magnetic field is passed through a first open mirror resonator where a small change in the transverse electron energy takes place (either an increase or decrease depending on the relative phase between the electron gyration and the resonator wave fields). This small change than leads to slower (or more rapid) gyration of those electrons that have gained (or lost) energy in the first resonator. The length of the drift region between the first and a second open mirror resonator is adjusted so that rapidly gyrating electrons overtake slowly gyrating ones at the entrance to the second resonator. Thus the particles arrive at the second resonator strongly bunched in gyration phase. The fields in the first resonator are generated by feedback of a small amount of energy from the wave mode in the second resonator with pi/2 phase lag so that the beam entering the second resonator is bunched at the right pnase angle to lose power efficiently to the fields in the second resonator. The lost power is extracted and guided to a utilization device.

Retinally Stabilized Differential Resolution Television Display

See 0181

0383 Rippled-Field Magnetron Apparatus

G. Bekefi
Department of the Air Force, Washington, DC
Filed 16 Sep 82, patented 14 Aug 84 5p
PATENT-4 465 953 Available from Comm. of Patents

The ripple-field magnetron is a novel cross-field millimeter wave source in which electrons move under the combined action of a radial electric field, an axial magnetic field and an azimuthally periodic wiggler magnetic field, B(w) cos (N x Theta) oriented transversely to the flow. Estimates are given of the frequency and growth rate of the free electron

laser (FEL) type of instability excited in this smooth-bore magnetron configuration.

0384 Self-Contained Hot-Hollow Cathode Gun Source Assembly
J. D. Zeren
Department of Energy, Washington, DC
Filed Aug 84 13p
PAT-APPL-6-637 628 Available from NTIS: price code A02
A self-contained hot-hollow cathode gun source assembly for use in a vacuum chamber includes a crucible block having a hot-hollow cathode gun mounted underneath and providing a hole for the magnetic deflection of the ion/electron beam into a crucible on top the block.

0385 Self-Detecting Optical Sensors
R. Zuleeg, J. K. Notthoff
Department of the Air Force, Washington, DC
Filed 14 Jul 82, patented 19 Mar 85 9p
PATENT-4 505 582 Available from Comm. of Patents
A short-ranging laser system having an improved pulser which includes a drive pulse signal generator and a driver. The drive pulse signal generator is essentially a triggered bipolar avalanche transistor that outputs a drive pulse signal through a voltage shifting circuit to the driver. The driver is essentially two parallel-connected power MOSFETs that output a driver pulse to a GaAs heterojunction laser diode. By circuit design, the deadtime plateau is substantially reduced so that the laser return energy homodynes with the still active laser to produce a detectable output for a target within 5 meters.

Self-Guarding Schottky Barrier Infrared Detector Array
See 0182

Spatial Light Modulator Having a Capacitively Coupled Photoconductor
See 1068

Temperature-Insensitive Optical Fibers
See 1073

Transparent Electrode for Optical Switch
See 1076

0386 Wavelength Dependent, Tunable, Optical Time Delay System for Electrical Signals
R. Soref
Department of the Air Force, Washington, DC
Filed 6 Feb 85 21p
PAT-APPL-6-698 979 Available from NTIS: price code A02
Disclosed is a wavelength dependent, tunable, optical time delay system for electronic signals having a conversion/tuning unit for converting an incoming electrical signal into an optical signal as well as selectively varying the wavelength of the optical signal; a single-mode, high dispersion optical fiber for receiving the optical signal and through which the optical signal propagates at a speed dependent upon its wavelength; and a detector/convertor for converting the optical signal back to an electrical outlet. By utilizing a separate preselected electronic control-field fed to the conversion/tuning unit, the wavelength of the optical signal entering the fiber can be varied over a preselected wavelength band of interest. By selectively varying the wavelength of the optical signal, the electrical signal can be effectively and rapidly time delayed as desired in response to the electronic signal.

ENERGY: Fuels

Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
See 0491

0387 Air Blast Type Coal Slurry Fuel Injector
R. G. Phatak
Department of Energy, Washington, DC
Filed 31 Aug 84 24p
PAT-APPL-6-645 956 Available from NTIS: price code A02
A device to atomize and inject a coal slurry in the combustion chamber of an internal combustion engine is disclosed which eliminates the use of a co nventional fuel injection pump/nozzle. The injector involves the use of compressed air to atomize and inject the coal slurry and like fuels. In one embodiment, the breaking and atomization of the fuel is achieved with the help of perforated discs and compressed air. In another embodiment, a cone shaped aspirator is used to achieve the breaking and atomization of the fuel. The compressed air protects critical bearing areas of the injector.

Disc Valve for Sampling Erosive Process Streams
See 0521

Drying of Pulverized Material with Heated Condensible Vapor
See 0523

0388 Fluidized Bed Gasification of Extracted Coal
D. C. Aquino, P. L. DaPrato, T. R. Gouker, P. Knoer
Department of Energy, Washington, DC
Filed 6 Jul 84 24p
PAT-APPL-6-628 079 Available from NTIS: price code A02
Coal or similar carbonaceous solids are extracted by contacting the solids in an extraction zone with an aqueous solution having a pH above 12.0 at a temperature between 65 exp 0 C and 110 exp 0 C for a period of time sufficient to remove bitumens from the coal into said aqueous solution, and the extracted solids are then gasified at an elevated pressure and temperature in a fluidized bed gasification zone (60) wherein the density of the fluidized bed is maintained at a value above 160 kg/m exp 3 . In a preferred embodiment of the invention, water is removed from the aqueous solution in order to redeposit the extracted bitumens onto the solids prior to the gasification step. 2 figs., 1 tab.

Heater Block Assembly for Use in Thermal Oxidation Testing of Jet Fuel
See 0551

High Pressure Liquid Level Monitor
See 0552

0389 Improved Catalysts for Carbon and Coal Gasification
D. W. McKee, C. L. Spiro, P. G. Kosky
Department of Energy, Washington, DC
Filed 25 May 84 47p
PAT-APPL-6-614 077 Available from NTIS: price code A03
This invention relates to improved catalysts for carbon and coal gasification and improved processes for catalytic coal gasification for the production of methane. The catalyst is composed of at least two alkali metal salts and a particulate carbonaceous substrate or carrier is used. 10 figures, 2 tables.

0390 Low Temperature Catalyst System for Methanol Production
R. S. Sapienza, W. A. Slegeir, T. E. O'Hare
Department of Energy, Washington, DC
Filed 20 Apr 84 8p
PAT-APPL-6-602 245 Available from NTIS: price code A02

This patent discloses a catalyst and process useful at low temperatures (150 exp 0 C) and preferably in the range 80 to 120 exp 0 C used in the production of methanol from carbon monoxide and hydrogen. The catalyst components are used in slurry form and comprise (1) a complex reducing agent derived from the component structure NaH-ROH-M(OAc) sub 2 where M is selected from the group consisting of Ni, Pd, and Co and R is a lower alkyl group containing 1 to 6 carbon atoms and (2) a metal carbonyl of a group VI (Mo, Cr, W) metal. For the first component, Nic is preferred (where M = Ni and R = tertiary amyl). For the second component, Mo(CO) sub 6 is preferred. The mixture is subjected to a conditioning or activating step under temperature and pressure, similar to the parameters given above, to afford the active catalyst.

0391 Low Temperature Catalysts and Process for Methanol Production
R. S. Sapienza
Department of Energy, Washington, DC
Filed 21 Feb 84 10p
PAT-APPL-6-581 935 Available from NTIS: price code A02

This patent discloses a catalyst and process useful in low temperatures (=1500 exp 0 C) and preferably in the range 80 to 120 exp 0 C used in the production of methanol from carbon monoxide and hydrogen; i.e., CO/2H exp 2 =CH sub 3 OH. The catalyst is used in slurry form and embodies a complex reducing agent derived from the component structure NaH-RONa-M(0Ac) sub 2 where M = Ni, Pd, Co and R = C sub 1 -C sub 6 . In the complex, Nic is preferred (where M = Ni and R = tertiary amyl). The complex is subjected to a conditioning or activating step under temperature, pressure, and atmospheric conditions similar to the parameters given above, to afford the active catalyst.

0392 Method and System for Producing Lower Alcohols
J. W. Rathke, R. J. Klingler, J. J. Heiberger
Department of Energy, Washington, DC.*Department of Energy, Washington, DC
Filed 26 Sep 83 18p
PAT-APPL-6-535 463 Available from NTIS: price code A02

It is an object of the present invention to provide an improved catalyst for the reaction of carbon monoxide with water to produce methanol and other lower alcohols. It is a further object to provide a process for the production of methanol from carbon monoxide and water in which a relatively inexpensive catalyst permits the reaction at low pressures. It is also an object to provide a process for the production of methanol from carbon monoxide and water in which a relatively inexpensive catalyst permits the reaction at low pressures. It is also an object to provide a process for the production of methanol in which ethanol is also directly produced. It is another object to provide a process for the production of mixtures of methanol with ethanol and propanol from the reaction of carbon monoxide and water at moderate pressure with inexpensive catalysts. It is likewise an object to provide a system for the catalytic production of lower alcohols from the reaction of carbon monoxide and water at moderate pressure with inexpensive catalysts. In accordance with the present invention, a catalyst is provided for the reaction of carbon monoxide and water to produce lower alcohols. The catalyst includes a lead heteropolyatomic salt in mixture with a metal formate or a precursor to a metal formate.

Method for Controlled Burnout of Abandoned Coal Mines and Waste Banks
See 0416

0393 Method for Removing Chlorine Compounds from Hydrocarbon Mixtures
E. J. Janoski, E. J. Hollstein
Department of Energy, Washington, DC
Filed 29 Sep 84 10p
PAT-APPL-6-655 598 Available from NTIS: price code A02

A process for removing halide ions from a hydrocarbon feedstream containing halogenated hydrocarbons wherein the contaminated feedstock is contacted with a solution of a suitable oxidizing acid containing a lanthanide oxide, the acid being present in a concentration of at least about 50 weight percent for a time sufficient to remove substantially all of the halide ion from the hydrocarbon feedstock.

0394 Method of Burning Lightly Loaded Coal-Water Slurries
C. R. Krishna
Department of Energy, Washington, DC
Filed 27 Jul 84 21p
PAT-APPL-6-635 019 Available from NTIS: price code A02

In a preferred arrangement of the method of the invention, a lightly loaded coal-water slurry, containing in the range of approximately 40% to 52% / 2% by weight coal, is atomized to strip water from coal particles in the mixture. Primary combustor air is forced around the atomized spray in a combustion chamber of a combustor to swirl the air in a helical path through the combustion chamber. A flame is established within the combustion chamber to ignite the stripped coal particles, and flame temperature regulating means are provided for maintaining the flame temperature within a desired predetermined range of temperatures that is effective to produce dry, essentially slag-free ash from the combustion process.

0395 Method of Distributing Liquefaction Catalysts in Solid Carbonaceous Material
S. W. Weller
Department of Energy, Washington, DC
Filed 23 May 84 14p
PAT-APPL-6-612 953 Available from NTIS: price code A02

A method of dispersing a liquefaction catalyst within coal or other carbonaceous solids involves providing a suspension in oil of microcapsules containing the catalyst. An aqueous solution of a catalytic metal salt is emulsified in the water-immiscible oil and the resulting minute droplets microencapsulated in polymeric shells by interfacial polycondensation. The catalyst is subsequently blended and dispersed throughout the powdered carbonaceous material to be liquefied. At liquefaction temperatures the polymeric microcapsules are destroyed and the catalyst converted to minute crystallites in intimate contact with the carbonaceous material. 2 tables.

ethods for Enhancing Mapping of Thermal Fronts in Oil ecovery
ee 0960

icroemulsions from Vegetable Oil and Aqueous Alcohol ith 1-Butanol Surfactant as Alternative Fuel for Diesel ngines
ee 0015

396 Microemulsions from Vegetable Oil and Lower Alcohol with Octanol Surfactant as Alternative Fuel for Diesel Engines
A. W. Schwab, E. H. Pryde
Department of Agriculture, Washington, DC
Filed 8 Aug 84 21p
PAT-APPL-6-638 826 Available from NTIS: price code A02
The energy crisis of recent years has stimulated research in the field of alternate and hybrid fuels. One area of particular interest relates to fuels for commercial and agricultural vehicles that are powered by diesel engines. The prospect of farmers becoming self-sufficient in regard to their energy needs has led to investigations of vegetable oils as diesel fuel substitutes. Deterrents to this concept are the generally inferior fuel properties of crude vegetable oils as compared to those of diesel oil. Of particular concern is the inherently high viscosity which causes poor atomization in direct-injected diesel engines. This results in fouling of the injectors and cylinders as well as a buildup of noncombusted fuel in the crankcase causing a thickening of the lubricating oil. This invention relates to a blended vegetable oil fuel which circumvents many of these problems.

0397 Physico-Chemical Fracturing and Cleaning of Coal
R. S. Sapienza, W. A. R. Slegeir
Department of Energy, Washington, DC.*Department of Energy, Washington, DC
Filed 30 Sep 83 13p
PAT-APPL-6-538 006 Available from NTIS: price code A02
This invention relates to a method of producing a crushable coal and reducing the metallic values in coal represented by Si, Al, Ca, Na, K, and Mg, which comprises contacting a coal/water mix in a weight ratio of from about 4:1 to 1:6 in the presence of CO sub 2 at pressures of about 100 to 1400 psi and a minimum temperature of about 15 exp 0 C for a period of about one or more hours to produce a treated coal/water mix. In the process the treated coal/water mix has reduced values for Ca and Mg of up to 78% over the starting mix and the advantageous CO sub 2 concentration is in the range of about 3 to 30 g/L. Below 5 g/L CO sub 2 only small effects are observed and above 30 g/L no further special advantages are achieved. The coal/water ratios in the range 1:2 to 2:1 are particularly desirable and such ratios are compatible with coal water slurry applications.

Portable Remote Laser Sensor for Methane Leak Detection
See 0611

0398 Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
M. Steinberg
Department of Energy, Washington, DC
Filed 17 Oct 84 12p
PAT-APPL-6-661 842 Available from NTIS: price code A02
A method is described for removing oxides of sulfur from the emissions of fossil fuel combustion by injecting portland cement into the boiler with the fuel, the combustion air, or downstream with the combustion gases. The cement products that result from this method is also described. 1 tab.

Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

Self-Actuating Vacuum Gas/Liquid Separator
See 0963

0399 Shale Oil Dearsenation Process
F. E. Brickman, T. F. Degnan, C. S. Weiss
Department of Commerce, Washington, DC
Filed 29 Oct 84 10p
PAT-APPL-6-665 875 Available from NTIS: price code A02
This invention relates to processing shale oil and in particular to processing shale oil to reduce the arsenic content. Specifically, the invention relates to treating shale oil by a combination of processes - coking and water washing. Many shale oils produced by conventional retorting processes contain inorganic materials, such as arsenic, which interfere with subsequent refining or catalytic hydroprocessing operations. Examples of these hydroprocessing operations are hydrogenation, denitrogenation, and desulfurization. From an environmental standpoint, removal of such contaminants may be desirable even if the shale oil is to be used directly as a fuel. Hence, it is desirable that contaminants such as arsenic be removed, or reduced to low levels, prior to further processing of the shale oil or prior to its use as a fuel.

0400 Solid State Hydrogen Pumping and Storage Material,
D. W. Forester, P. Lubitz, C. Vittoria
Department of the Navy, Washington, DC
Filed 9 Jun 82, patented 18 Dec 84 5p
PATENT-4 489 049 Available from Comm. of Patents
An object of the present invention is to provide a solid-state hydrogen storage material that does not require high pressure for efficient absorbtion or high temperature for efficient discharge. A further object of the present invention is to provide a solid-state hydrogen material that is not impaired by atmospheric exposure and that does not discharge hydrogen at room temperature. The above and other objects are achieved in the present invention which comprises a layer of an amorphous binary alloy of a lanthanide and iron, nickel or cobalt disposed on a suitable substrate and overcoated with a palladium metal layer. The present invention adsorbs hydrogen at low pressures, resists surface poisoning, stores hydrogen at room temperature, and discharges hydrogen by heating the storage material to a relatively moderate temperature.

0401 Solvent Treatment of Coal for Improved Liquefaction
H. R. Appell
Department of Energy, Washington, DC
Filed 8 Mar 84 14p
PAT-APPL-6-587 422 Available from NTIS: price code A02
Increased liquefaction yield is obtained by pretreating a slurry of solid carbonaceous material and a liquid hydrocarbonaceous solvent at a temperature above 200 exp 0 C but below exp 0 C for a period of 10 minutes to four hours prior to exposure to liquefaction temperatures. 4 tables.

0402 Stabilizing Coal-Water Mixtures with Portland Cement
M. Steinberg, C. R. Krishna
Department of Energy, Washington, DC
Filed 17 Oct 84 9p
PAT-APPL-6-661 841 Available from NTIS: price code A02
Coal-water mixes stabilized by the addition of Portland cement which may additionally contain retarding carbohydrates, or borax are described. 1 tab.

0403 Superheated Fuel Injection for Combustion of Liquid-Solid Slurries
F. A. Robben
Department of Energy, Washington, DC
Filed 19 Oct 84 24p
PAT-APPL-6-662 658 Available from NTIS: price code A02
A method and device are claimed for obtaining, upon injection, flash evaporation of a liquid in a slurry fuel to aid in ignition and combustion. The device is particularly beneficial for use of coal-water slurry fuels in internal combustion engines such as diesel engines and gas turbines, and in external combustion devices such as boilers and furnaces. The slurry fuel is heated under pressure to near critical temperature in an injector accumulator, where the pressure is sufficiently high to prevent boiling. After injection into a combustion chamber, the water temperature will be well above boiling point at a reduced pressure in the combustion chamber, and flash boiling will preferentially take place at solid-liquid surfaces, resulting in the shattering of water droplets and the subsequent separation of the water from coal particles. This prevents the agglomeration of the coal particles during the subsequent ignition and combustion process, and reduces the energy required to evaporate the water and to heat the coal particles to ignition temperature. The overall effect will be to accelerate the ignition and combustion rates, and to reduce the size of the ash particles formed from the coal. 2 figs., 2 tabs.

ENERGY: Heating & Cooling

0404 Combined Cold Compressor/Ejector Helium Refrigerator
D. P. Brown
Department of Energy, Washington, DC
Filed 5 Jun 84 18p
PAT-APPL-6-617 656 Available from NTIS: price code A02
A refrigeration apparatus having an ejector operatively connected with a cold compressor to form a two-stage pumping system. This pumping system is used to lower the pressure, and thereby the temperature of a bath of boiling refrigerant (helium). The apparatus as thus arranged and operated has substantially improved operating efficiency when compared to other processes or arrangements for achieving a similar low pressure.

0405 Control System for Fluid Heated Steam Generator
J. F. Boland, J. F. Koenig
Department of Energy, Washington, DC
Filed 29 May 84 17p
PAT-APPL-6-614 507 Available from NTIS: price code A02
A control system for controlling the location of the nucleate-boiling region in a fluid heated steam generator comprises means for measuring the temperature gradient (change in temperature per unit length) of the heating fluid along the steam generator; means for determining a control variable in accordance with a predetermined function of temperature gradients and for generating a control signal in response thereto; and means for adjusting the feedwater flow rate in accordance with the control signal.

0406 Feedback Regulated Induction Heater for a Flowing Fluid
A. Migliori, G. W. Swift
Department of Energy, Washington, DC
Filed 13 Jun 84 15p
PAT-APPL-6-620 287 Available from NTIS: price code A02
A regulated induction heater for heating a stream of flowing fluid to a predetermined desired temperature. The heater includes a radiofrequency induction coil which surrounds a glass tube through which the fluid flows. A heating element consisting of a bundle of approximately 200 stainless steel capillary tubes located within the glass tube couples the output of the induction coil to the fluid. The temperature of the fluid downstream from the heating element is sensed with a platinum resistance thermometer, the output of which is applied to an adjustable porportional and integral feedback control circuit which regulates the power applied to the induction coil. The heater regulates the fluid temperature to within 0.005 exp 0 C at a flow rate of 50 cm exp 3 / sec with a response time of less than 0.1 second, and can accommodate changes in heat load up to 1500 watts.

0407 Gas Hydrate Cool Storage System
M. P. Ternes, R. J. Kedl
Department of Energy, Washington, DC
Filed 12 Sep 84 19p
PAT-APPL-6-649 628 Available from NTIS: price code A02
The invention presented relates to the development of a process utilizing a gas hydrate as a cool storage medium for alleviating electric load demands during peak usage periods. Several objectives of the invention are mentioned concerning the formation of the gas hydrate as storage material in a thermal energy storage system within a heat pump cycle system. The gas hydrate was formed using a refrigerant in water and an example with R-12 refrigerant is included.

0408 Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
P. J. Shlichta, B. A. Nerad
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 26 Jan 82, patented 10 Jul 84 11p
PATENT-4 459 470 Available from Comm. of Patents
Electrodes are positioned in intimate contact with an outer surface of a thin electrically insulating protecting layer of architectural reflective glass. Application of a voltage of sufficient magnitude substantially destroys the insulating layer located beneath the electrodes. A subsequent application of voltage results in a passage of current through the underlying thin, light reflective metal or metal oxide layer and in concomitant output of heat.

Heat Management System for Aircraft
See 1106

0409 Heat Pipe and Method of making same
Ahern. Ahern
Department of the Air Force, Washington, DC
Filed 6 Feb 85 15p
PAT-APPL-6-698 957 Available from NTIS: price code A02
The present invention relates generally to semiconductor crystal growth, and, in particular, relates to a device used in an apparatus for crystal growth. The instant invention sets forth a heat pipe for crystal growth that is able to operate at high pressure/temperature. A cylindrical heat pipe for use in a crystal growth furnace has walls of tungsten with a layer of titanium deposited thereover to prevent oxidation. Strengthening members are placed between the walls to provide added strength. A wick structure of tungsten is used in the annular chamber to carry a working fluid of lithium.

0410 Heat Pipe Wick
J. E. Beam
Department of the Air Force, Washington, DC
Filed 3 Jul 85 13p
PAT-APPL-6-751 399 Available from NTIS: price code A02
This patent application discloses a heat pipe with an improved wick design which has an unheated section of greater wick wall thickness next to the evaporator section of the heat pipe and on the opposite side of the evaporator section from the condenser section. The greater wick wall thickness acts as a reservoir of liquid heat pipe working fluid to prevent dry out of the wick during pulsed high thermal energy transfer conditions and to eliminate the need to enforce quasisteady state heat input requirements during start-up operation.

0411 High Temperature Structural Insulating Material
W. Y. Chen
Department of Energy, Washington, DC
Filed 27 Jul 84 11p
PAT-APPL-6-625 324 Available from NTIS: price code A02
A high temperature structural insulating material useful as a liner for cylinders of high temperature engines through the favorable combination of high service temperature (above about 800 exp 0 C), low thermal conductivity (below about 0.2 W/m exp 0 C), and high compressive strength (above about 250 psi). The insulating material is produced by selecting hollow ceramic beads with a softening temperature above about 800 exp 0 C, a diameter within the range of 20-200 mu m, and a wall thickness in the range of about 2 to 4 mu m; compacting the beads and a compatible silicate binder composition under pressure and sintering conditions to provide the desired structural form with the structure having a closed-cell, compact array of bonded beads.

0412 High Thermal Power Density Heat Transfer Apparatus Providing Electrical Isolation at High Temperature Using Heat Pipes
J. F. Morris
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 24 Jun 83, patented 19 Mar 85 6p
PATENT-4 506 183 Available from Comm. of Patents
This invention is directed to transferring heat from an extremely high temperature source to an electrically isolated lower temperature receiver. The invention is particularly concerned with supplying thermal power to a thermionic converter from a nuclear reactor with electric isolation. Heat from a high temperature heat pipe is transferred through a vacuum or a gap filled with electrically nonconducting gas to a cooler heat pipe. If the receiver requires gratr thermal power density, geometries are used with larger heat pipe areas for transmitting and receiving energy than the area for conducting the heat to the thermionic converter. In this way the heat pipe capability for increasing thermal power densities compensates for the comparative low thermal power densities through the electrically nonconducting gap between the two heat pipes.

0413 Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
J. P. Alario, R. F. Brown, R. Kosson
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 30 May 84 14p
PAT-APPL-6-615 505 Available from NTIS: price code A02
A screen mesh artery supported concentrically within the evaporator section of a heat pipe liquid channel retains liquid in the channel and assures continued and uniform liquid feed to the heat pipe evaporation section during periods of excessive heat transfer.

0414 Induction Heating Gun
J. D. Buckley, R. J. Swaim, R. L. Fox, D. F. Johnston
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 24 Jun 83, patented 4 Jun 85 9p
PATENT-4 521 659 Available from Comm. of Patents
A device for inductively heating and fusing thermoplastics is presented. It includes an alternating current passing through a tank circuit, the inductor member of the tank circuit is wrapped around a curved pole piece of a ferro-magnetic material. The magnetic flux arising within the inductor coil member flows to the ends of the pole piece and into a screen placed between the materials to be joined. The flux induces a current in the screen, and heat is generated to melt the thermoplastics together. Because only 30 to 150 watts of power are passed through the tank circuit, a wire which will remain cool under operational wattage may be selected, making air or fluid cooling unnecessary.

0415 Low Gravity Exothermic Heating/Cooling Apparatus
R. M. Poorman
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 18 Mar 82, patented 30 Apr 85 7p
PATENT-4 513 810 Available from Comm. of Patents
A low gravity exothermic heating/cooling apparatus is disclosed for processing materials in space which includes an insulated casing and a sample support carried within the casing which support a sample container. An exothermic heat source includes a plurality of segments of exothermic material stacked one upon another to produce a desired temperature profile when ignited. The sample container is arranged within the core of the stacked exothermic heating material. Igniters are spaced vertically along the axis of the heating material to ignite the exothermic material at spaced points to provide total rapid burn and release of heat. To rapidly cool and quench the heat, a source of liquid carbon dixoide is provided which is conveyed through a conduit and a metering orifice into a distribution manifold where the carbon dioxide is gasified and dispersed around the exothermic heating material and the sample container via tubes for rapidly cooling the material sample.

0416 Method for Controlled Burnout of Abandoned Coal Mines and Waste Banks
R. F. Chaiken
Department of the Interior, Washington, DC
Filed 10 May 82, patented 14 Jun 83 14p
PATENT-4 387 655 Available from Comm. of Patents
A method is provided for recovering energy from wasted coal by the steps of creating at least one channel through the wasted coal, igniting the wasted coal in said channel, subjecting said wasted coal, at least at said channel, to a negative pressure applied at a preselected point, connecting said wasted coal, at least at said channel, to a source of air remote from said preselected zone whereby air is induced through said ignited coal to burn said coal to produce hot gaseous products of combustion, and the hot gaseous products of combustion are drawn from said zone, and utilizing said hot gaseous products of combustion in a heat exchange relationship to recover the heat energy therefrom.

0417 Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
J. P. Alario, R. F. Brown, R. L. Kosson
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 30 May 84, patented 7 May 85 8p
PATENT-4 515 207 Available from Comm. of Patents
A screen mesh artery supported concentrically within the evaporator section of a heat pipe liquid channel retains liquid in the channel. Continued and uniform liquid feed to the heat pipe evaporation section (20) during periods of excessive heat transfer is assured. The overall design provides high evaporation and condensation film coefficients for the working fluid by means of the circumferential grooves in the walls of the vapor channel, while not interfering with the overall heat transport capability of the axial groove. The design has particular utility in zero-g environments.

0418 Multi-Leg Heat Pipe Evaporator
J. P. Alario
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 31 May 84 12p
PAT-APPL-6-616 002 Available from NTIS: price code A02
A multileg heat pipe evaporator facilitates the use and application of a monogroove heat pipe by providing an evaporation section which is compact in area and structurally more compatible with certain heat exchangers or heat input apparatus. The evaporation section of a monogroove heat pipe is formed by a series of parallel legs having a liquid and a vapor channel and a communicating capillary slot therebetween. The liquid and vapor channels and interconnecting capillary slots of the evaporating section are connected to the condensing section of the heat pipe by a manifold connecting liquid and vapor channels of the parallel evaporation section legs with the corresponding liquid and vapor channels of the condensing section.

0419 Night Vision Compatible Illumination for Vehicle Crewmember Workspace
H. L. Task
Department of the Air Force, Washington, DC
Filed 4 Jan 85 25p
PAT-APPL-6-688 944 Available from NTIS: price code A02
This invention relates to the field of general illumination in the crewmember work space of a night-operated vehicle; the desired illumination being compatible with night vision equipment. The present invention provides an improved aircraft cockpit lighting arrangement which of course may also be applied to land vehicles, water craft, surveillance equipment, and other uses where infrared responsive apparatus is threatened with the possibility of locally sourced large signal swamping. The present invention also offers a fast and convenient arrangement for changing the cockpit or vehicle control area lightning in order to accommodate infrared equipment -- an arrangement which can easily be reversed to alternate or normal forms of cockpit lighting when needed. An arrangement for conveniently changing the illumination in an aircraft cockpit or other enclosure to a spectrum compatible with night vision infrared equipment including provision for easy return to the original illumination source. Selected LED(light Emitting Diode) elements are employed in multiple element arrays using a tether connected package that can be excited directly form existing wiring in fixtures.

0420 Non-Carbon Induction Furnace
C. E. Holcombe, D. R. Masters, W. A. Pfeiler
Department of Energy, Washington, DC
Filed 6 Jan 84 13p
PAT-APPL-6-568 770 Available from NTIS: price code A02
The present invention is directed to an induction furnace for melting and casting highly pure metals and alloys such as uranium and uranium alloys in such a manner as to minimize contamination of the melt by carbon derived from the materials and the environment within the furnace. The subject furnace is constructed of non-carbon materials and is housed within a conventional vacuum chamber. The furnace comprises a ceramic oxide crucible for holding the charge of metal or alloys. The heating of the crucible is achieved by a plasma-sprayed tungsten susceptor surrounding the crucible which, in turn, is heated by an rf induction coil separated from the susceptor by a cylinder of inorganic insulation. The furnace of the present invention is capable of being rapidly cycled from ambient temperatures to about 1650 exp 0 C for effectively melting uranium and uranium alloys without the attendant carbon contamination problems previously encountered when using carbon-bearing furnace materials.

0421 Nonsaturable Microdryer
T. B. Hirschfeld
Department of Energy, Washington, DC
Filed 23 May 84 21p
PAT-APPL-6-612 954 Available from NTIS: price code A02
A nonsaturable microdryer is provided for electrolytically removing moisture from sealed containers, particularly electronic equipment. An electrode/electrolyte assembly is disposed within a channel between the interior and exterior of a sealed container. A catalytic barrier disposed between the interior of the sealed container and the electrode/electrolyte assembly prevents the build-up of explosive concentrations of hydrogen by converting back-diffusing hydrogen and oxygen back into water, which is then recycled. A semipermeable membrane disposed between the exterior of the sealed container and the electrode/electrolyte assembly allows selective removal of hydrogen and prevents intake of water.

0422 Piezoelectric Polymer Heat Exchanger
S. Edelman, L. D. Ballard
Department of the Army, Washington, DC
Filed 20 Apr 83, patented 3 Jan 84 6p
PAT-APPL-6-370 027 Available from NTIS: price code A02
Disclosed is an apparatus for providing for increased heat transfer efficiency of a heat exchanger by separating contiguous fluid conductive channels by means of a flexible sheet fabricated from a piezoelectric polymer. An electrode pattern of predetermined configuration is applied to one or both sides of the piezoelectric sheet and an electrical signal applied thereto in order to set the sheet into a flexural resonance condition whereupon a standing wave pattern is established to not only break up the boundary layer of fluid which adheres to each side of the sheet, but also minimizing the thickness of the laminar sub-layer.

0423 Reciprocating Magnetic Refrigerator Employing Tandem Porous Matrices within a Reciprocating Displacer
D. L. Johnson
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 9 Mar 84, patented 2 Apr 85 13p
PATENT-4 507 928 Available from Comm. of Patents
Disclosed is a method and apparatus for a magnetic refrigeration system. A continuously reciprocating displacer houses at least a pair of paramagnetic substances each of which is alternately driven into and out of a magnetic field. Two separate bidirectional pumping systems flow helium gas through the displacer and through both paramagnetic substances to create heat exchange conditions at two separate temperature extremes.

0424 Rod-to-Rod Spacing Illuminating Device
G. Fodor, P. S. Gaal
Department of Energy, Washington, DC
Filed 14 Mar 84 13p
PAT-APPL-6-589 280 Available from NTIS: price code A02
A system for obtaining an image of an object includes at least one light source having an incandescent filament. An image of the filament is projected onto an object to be observed. Using light reflected from the object, an image of the object is generated. Such a system may employ a television camera to generate the image, and is especially suited for remote observation of objects.

0425 Solar System Fault Detection
R. B. Farrington, J. C. Pruett
Department of Energy, Washington, DC
Filed 14 May 84 29p
PAT-APPL-6-609 686 Available from NTIS: price code A03
A fault detecting apparatus and method are provided for use with an active solar system. The apparatus provides an indication as to whether one or more predetermined faults have occurred in the solar system. The apparatus includes a plurality of sensors, each sensor being used in determining whether a predetermined condition is present. The outputs of the sensors are combined in a pre-established manner in accordance with the kind of predetermined faults to be detected. Indicators communicate with the outputs generated by combining the sensor outputs to give the user of the solar system and the apparatus an indication as to whether a predetermined fault has occurred. Upon detection and indication of any predetermined fault, the user can take appropriate corrective action so that the overall reliability and efficiency of the active solar system are increased.

0426 Solid State Radiative Heat Pump
P. H. Berdahl
Department of Energy, Washington, DC
Filed 28 Sep 84 30p
PAT-APPL-6-655 500 Available from NTIS: price code A03
A solid state radiative heat pump operable at room temperature (300 K) utilizes a semiconductor having a gap energy in the range of 0.03-0.25 eV and operated reversibly to produce an excess or deficit of change carriers as compared equilibrium. In one form of the invention an infrared semiconductor photodiode is used, with forward or reverse bias, to emit an excess or deficit of infrared radiation. In another form of the invention, a homogenous semiconductor is subjected to orthogonal magnetic and electric fields to emit an excess or deficit of infrared radiation. Three methods of enhancing transmission of radiation the active surface of the semiconductor are disclosed. In one method, an anti-refection layer is coated into the active surface of the semiconductor, the anti-reflection layer having an index of refraction equal to the square root of that of the semiconductor. In the second method, a passive layer is spaced from the active surface of the semiconductor by a submicron vacuum gap, the passive layer having an index of refractive equal to that of the semiconductor. In the third method, a coupler with a paraboloid reflecting surface surface is in contact with the active surface of the semiconductor, the coupler having an index of refraction about the same as that of the semiconductor.

0427 Temperature-Controllable Heat Valve
L. A. Schmid
Department of Commerce, Washington, DC
Filed 30 Nov 83, patented 22 Jan 85 21p
PATENT-4 494 595 Available from Comm. of Patents
The basic heat pipe principle is extended by providing means for interrupting and modulating the return of liquid condensate to the evaporator end of the heat pipe. This is done by interposing a metallic screen (called the control grid) in the fluid path. This will stop the flow if the pressure drop across the screen is insufficient to overcome the resistance offered by surface tension. Because this surface tension increases as the temperature of the control grid decreases, the resistance of the screen, and hence the strength of the return flow of condensate to the evaporator, can be varied by changing the temperature of the control grid. This control temperature can be considerably lower than the operating temperature of the heat pipe, which means that low-temperature control devices can be used to control high-temperature heat flow.

0428 Ten Degree Kelvin Hydride Refrigerator
J. A. Jones
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 14 Feb 85 14p
PAT-APPL-6-701 486 Available from NTIS: price code A02
A compact hydride absorption refrigeration system with few moving parts for 10 Kelvin operation is disclosed and comprises liquid hydrogen producing means in combination with means for solidifying and subliming the liquid hydrogen produced. The liquid hydrogen is sublimed at about 10 Kelvin. By using a symmetrical all hydrogen redundant loop system, a 10 Kelvin refrigeration system can be operated

for many years with only a fraction of the power required for prior art systems.

0429 Thermally Isolated Structural Support Link
C. H. Lang
Department of the Air Force, Washington, DC
Filed 12 Jun 81, patented 14 Aug 84 7p
PATENT-4 465 392 Available from Comm. of Patents
A thermally isolated structural support link has a tube-like support element, a pair of bearing housings being fixedly secured within each end of the support element, respectively, by an exceptionally strong adhesive, and a spherical monoball bearing affixed within each bearing housing by an exceptionally strong adhesive. Each bearing housing is made of a pair of substantially identical bearing casings which support there between the bearing. The tube-like element, bearing housing and adhesive all are made of a material having excellent thermal isolation properties in order to provide not only thermal isolation between components of an assembly but also excellent supportive strength.

0430 Woven Heat Exchanger
R. R. Piscitella
Department of Energy, Washington, DC
Filed 16 Jul 84 20p
PAT-APPL-6-631 265 Available from NTIS: price code A02
This invention relates to a heat exchanger for waste heat recovery from high temperature industrial exhaust streams. In a woven ceramic heat exchange r using the basic tube-in-shell design, each heat exchanger consisting of tube sheets and tube, is woven separately. Individual heat exchangers are assembled in cross-flow configuration. Each heat exchanger is woven from high temperature ceramic fiber, the warp is continuous from tube to tube sheet providing a smooth transition and unitized construction.

ENERGY: Solar

Apparatus and Method for the Horizontal, Crucible-Free Growth of Silicon Sheet Crystals
See 1082

0431 Cable Tensioned Membrane Solar Collector Module with Variable Tension Control
L. M. Murphy
Department of Energy, Washington, DC
Filed 9 Jan 84 29p
PAT-APPL-6-569 085 Available from NTIS: price code A03
Disclosed is a solar collector comprising a membrane member for concentrating sunlight, a plurality of elongated structural members for suspending the membrane member thereon, and a plurality of control members for adjustably tensioning the membrane member, as well as for controlling a focus produced by the membrane members. Each control member is disposed at a different corresponding one of the plurality of structural members. The collector also comprises an elongated flexible tensioning member, which serves to stretch the membrane member and to thereafter hold it in tension, and a plurality of sleeve members which serve to provide the membrane member with a desired surface contour during tensioning of the membrane member. The tensioning member is coupled to the structural members such that the tensioning member is adjustably tensioned through the structural members. The tensioning member is also coupled to the membrane member through the sleeve members such that the sleeve members uniformly and symmetrically stretch the membrane member upon applying tension to the tensioning member with the control members.

0432 Increased Voltage Photovoltaic Cell
B. Ross, D. B. Bickler, B. D. Gallagher
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 8 Feb 84, patented 18 Jun 85 5p
PATENT-4 524 237 Available from Comm. of Patents
A photovoltaic cell, such as a solar cell, is provided which has a higher output voltage than prior cells. The improved cell includes a substrate of doped silicon, a first layer of silicon disposed on the substrate and having opposite doping, and a second layer of silicon carbide disposed on the first layer. The silicon carbide preferably has the same type of doping as the first layer.

0433 Lithium Counterdoped Silicon Solar Cell
I. Weinberg, H. W. Brandhorst
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 7 Nov 84 10p
PAT-APPL-6-669 140 Available from NTIS: price code A02
The resistance to radiation damage of an n(/)p boron doped silicon solar cell is improved by lithium counterdoping. Even though lithium is an n-dopant in silicon, the lithium is introduced in small enough quantities so that the cell base remains p-type. The lithium is introduced into the solar cell wafer by implantation of lithium ions whose energy is about 50 keV. After this lithium implantation, the wafer is annealed in a nitrogen atmosphere at 375 C for two hours.

Mask Aligner for Solar Cell Fabrication
See 0672

Method and Apparatus for Measuring Areas of Photoelectric Cells and Photoelectric Cell Performance Parameters
See 0579

0434 New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
T. Daud, K. M. Koliwad
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 23 May 84 10p
PAT-APPL-6-612 990 Available from NTIS: price code A02
A silicon solar cell wherein the ratio of the p-n junction area to the total outer surface area of the cell exposed to solar radiation is reduced to provide increased open circuit voltage and improved efficiency is disclosed. The solar cell is fabricated by forming p-n junction areas in discrete spaced-apart portions of a silicon wafer. These discrete areas are spaced in any desired manner and coupled with a metal grid of narrow metal contacts. The total area of the discrete portions forming the p-n junctions is controlled to provide improved efficiency.

0435 Polymer Blends for Use in Photoelectrochemical Cells for Conversion of Solar Energy to Electricity
T. Skotheim
Department of Energy, Washington, DC
Filed 28 Sep 84 21p
PAT-APPL-6-655 489 Available from NTIS: price code A02
There is disclosed a polymer blend of a highly conductive polymer and a solid polymer electrolyte that is designed to

achieve better charge transfer across the conductive film/polymer electrolyte interface of the electrochemical photovoltaic cell. The highly conductive polymer is preferably polypyrrole or poly-N-p-nitrophenylpyrrole and the solid polymer electrolyte is preferably polyethylene oxide or polypropylene oxide.

Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
See 0765

0436 Ribbon Growing Method and Apparatus
A. D. Morrison
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 4 Apr 85 13p
PAT-APPL-6-719 798 Available from NTIS: price code A02
A method and apparatus are described which facilitate the growing of silicon ribbon. A container for molten silicon has a pair of passages in its bottom through which filaments extend to a level above the molten silicon, so as the filaments are pulled up they drag up molten silicon to form a ribbon. A pair of guides surround the filaments along most of the height of the molten silicon, so that the filament contacts only the upper portion of the melt. This permits a filament to be used which tends to contaminate the melt if it is in long term contact with the melt. This arrangement also enables a higher melt to be used without danger that the molten silicon will run out of any bottom hole.

0437 Rim-Drive Cable-Aligned Heliostat Collector System
J. E. Dolan, T. D. Sands
Department of Energy, Washington, DC
Filed 30 Sep 82 29p
PAT-APPL-6-429 923 Available from NTIS: price code A03
Disclosed is a heliostat collector apparatus comprising at least one heliostat suspended from a plurality of longitudinally extending linkage means. An enclosure structure is disposed adjacent the heliostat and provides a means for allowing the heliostat to be substantially protected from weathering. A first drive means is operatively connected to the heliostat to effect steering thereof in at least one of first and second predetermined directions. Finally, a frame member is adapted for supporting the heliostat at an inner portion thereof. The frame includes a plurality of outer expandable portions. Each one of the expandable portions is adapted to slidably engage a corresponding one of the plurality of linkage means. The expandable portions are further adapted to allow the heliostat to be slidably moved along the linkage means in directions away from and towards the enclosure structure and to substantially reduce stress acting on the heliostat during steering.

0438 Saltless Solar Pond
E. I. H. Lin
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 28 May 82, patented 11 Sep 84 10p
PATENT-4 470 403 Available from Comm. of Patents
A solar pond adapted for efficiently trapping and storing radiant solar energy without the use of a salt concentration gradient in the pond is disclosed. A body of water which may be fresh, saline, relatively clear or turbid, is substantially covered by a plurality of floating honeycomb panels. The honeycomb panels are made of a material such as glass which is pervious to short wave solar radiation but impervious to infrared radiation. Each honeycomb panel includes a multitude of honeycomb cells. The honeycomb panels are divided into the elongated honeycomb cells by a multitude of intermediate plates disposed between a bottom plate and top plate of the panel. The solar pond is well suited for providing hot water of approximately 85 to 90 C temperature for direct heating applications, and for electrical power generation.

0439 Screen Printed Interdigitated Back Contact Solar Cell
C. R. Baraona, G. A. Mazaris, A. T. Chai
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 10 Feb 83, patented 23 Oct 84 6p
PATENT-4 478 879 Available from Comm. of Patents
Interdigitated back contact solar cells are made by screen printing dopant materials onto the back surface of a semiconductor substrate in a pair of interdigitated patterns. These dopant materials are then diffused into the substrate to form junctions having configurations corresponding to these patterns. Contacts having configurations which match the patterns are then applied over the junctions.

Silicon Nitride Protective Coatings for Silvered Glass Mirrors
See 0769

Solar Cell Coverslide Extraction Method and Apparatus
See 0686

0440 Solar Energy Converter Using Surface Plasma Waves
L. M. Anderson
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 19 Apr 83, patented 13 Nov 84 7p
PATENT-4 482 778 Available from Comm. of Patents
Sunlight is dispersed over a diffraction grating formed on the surface of a conducting film on a substrate. The angular dispersion controls the effective grating period so that a matching spectrum of surface plasmons is excited for parallel processing on the conducting film. The resulting surface plasmons carry energy to an array of inelastic tunnel diodes. This solar energy converter does not require different materials for each frequency band, and sunlight is directly converted to electricity in an efficient manner by extracting more energy from the more energetic photons.

0441 Solar Powered Actuator with Continuously Variable Auxiliary Power Control
F. J. Nola
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 6 May 82, patented 18 Dec 84 6p
PATENT-4 489 243 Available from Comm. of Patents
A solar powered system is disclosed in which a load such as a compressor is driven by a main induction motor powered by a solar array. An auxiliary motor shares the load with the solar powered motor in proportion to the amount of sunlight available, is provided with a power factor controller for controlling voltage applied to the auxiliary motor in accordance with the loading on that motor. In one embodiment, when sufficient power is available from the solar cell, the auxiliary motor is driven as a generator by excess power from the main motor so as to return electrical energy to the power company utility lines.

Solar System Fault Detection
See 0425

0442 Solar-Heated Oil Shale Retort
S. A. Qader
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 23 Jul 84 16p
PAT-APPL-6-633 363 Available from NTIS: price code A02
An oil recovery process in which a bed of oil shale particles are pyrolyzed in a retort by means of a heated carrier gas stream passing through a central conduit within the bed, and then upwardly through a fixed bed or fluidized bed of the shale is disclosed. The shale is subjected to pyrolysis and evolves kerogen liquid, thermally and pyrolyzed liquids, and gases which enter the carrier gas to form a pyrolysis gas. The liquid pyrolysis oil is separated from the pyrolysis gas ion separator and a portion of the separated gas is recycled to a solar heat exchanger. There it is heated to a temperature of at least 350 C before being fed to the central conduit.

0443 Stable Density Stratification Solar Pond
F. L. Lansing
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 18 Oct 83 17p
PAT-APPL-6-542 557 Available from NTIS: price code A02
A stable density stratification solar pond for use in the collection and storage of solar thermal energy is disclosed. The solar pond includes a container having a first section characterized by an internal wall of a substantially cylindrical configuration and a second section having an internal wall of a substantially truncated conical configuration surmounting the first section in coaxial alignment. The second section of the container is characterized by a base of a diameter substantially equal to the diameter of the first section and a truncated apex defining a solar energy acceptance opening. A body of immiscible liquids is disposed within the container and comprises a first portion substantially filling the first section of the container and a second, aqueous based portion, substantially filling the second section of the container. The first portion is an organic based liquid of a darker color than the second portion and of a greater density. A removable protective cover plate is provided for covering the acceptance opening.

0444 Stable n-CuINSe/sub 2/Iodide-Iodine Photoelectrochemical Cell
D. Cahen, Y. W. Chen
Department of Energy, Washington, DC
Filed 20 Sep 84 16p
PAT-APPL-6-652 396 Available from NTIS: price code A02
In a photoelectrochemical solar cell, stable output and solar efficiency in excess of 10% are achieved with a photoanode of n-CuInSe sub 2 electrode material and an iodine/iodide redox couple used in a liquid electrolyte. The photoanode is prepared by treating the electrode material by chemical etching, for example in Br sub 2 /MeOH; heating the etched electrode material in air or oxygen; depositing a surface film coating of indium on the electrode material after the initial heating; and thereafter again heating the electrode material in air or oxygen to oxidize the indium. The electrolyte is treated by the addition of Cu exp / or Cu exp 2/ salts and in In exp 3/ salts.

0445 Thermionic Photovoltaic Energy Converter
D. L. Chubb
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 15 Feb 84, patented 9 Jul 85 7p
PATENT-4 528 417 Available from Comm. of Patents
A thermionic photovoltaic energy conversion device comprises a thermionic diode mounted within a hollow tubular photovoltaic converter. The thermionic diode maintains a cesium discharge for producing excited atoms that emit line radiation in the wavelength region of 850 nm to 890 nm. The photovoltaic converter is a silicon or gallium arsenide photovoltaic cell having bandgap energies in this same wavelength region for optimum cell efficiency.

Thermochemical Energy Transport Using a Hydrogen Rich Working Fluid
See 0483

ENERGY: Other

0446 Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
L. C. Hsu, W. H. Philipp, D. W. Sheibley, O. D. Gonzalez-Sanabria
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 10 Jul 81, patented 19 Mar 85 6p
PATENT-4 505 998 Available from Comm. of Patents
A battery separator for an alkaline battery is described. The separator comprises a cross linked copolymer of vinyl alcohol units and unsaturated carboxylic acid units. The cross linked copolymer is insoluble in water, has excellent zincate diffusion and oxygen gas barrier properties and a low electrical resistivity. Cross linking with a polyaldehyde cross linking agent is preferred.

Aluminum Battery Alloys
See 0797

0447 Autonomous Uninterruptable Power Supply Apparatus
J. H. Masson
Department of the Air Force, Washington, DC
Filed 20 Dec 84 18p
PAT-APPL-6-684 240 Available from NTIS: price code A02
This invention relates broadly to a power supply apparatus, and in particular to an autonomous uninterruptable power supply apparatus. The purpose of an uninterruptable power supply (UPS) is to protect critical electrical loads from transient or steady stage outages or disturbances in the primary power source. The basic configuration of a typical, commercially available, uninterruptable power supply is comprised at a minimum of a standby battery and a battery charger and may also include an inverter for AC applications. Systems of this type can be found in most computer installations and laboratory systems which cannot tolerate even momentary disturbances of input power. This document describes an autonomous uninterruptable power supply apparatus utilizing a digital processor unit as a control and monitor unit to measure and control input and output parameters in the power supply. A battery charger is utilized to maintain the voltage and current levels with the backup battery supply source which powers an inverter unit that converts the DC power to an AC output.

0448 Battery Charger
S. W. Vreeland
Department of the Navy, Washington, DC
Filed 30 Jul 84 23p
PAT-APPL-6-636 038 Available from NTIS: price code A02
A battery charger analyzer utilizing a down pulse configuration employs a number of power switching transistors driven from a pulse-width modulator in a control section which monitors and analyzes the battery temperature, charge condition, current provided, and length of time in the charge cycle, all of which affect the operation of the pulsewidth modulator and thereby the charge supplied to the battery. The charger analyzer supplies 95% of the battery charge at either of two selected charging rates.

0449 Battery Control and Fault Detection Method
W. S. Bishop
Department of the Air Force, Washington, DC
Filed 11 Jul 84 13p
PAT-APPL-6-629 865 Available from NTIS: price code A02
This is a method for control, fault detection, fault isolation, and state-of-health monitoring of batteries and battery arrays. The method consists of measuring all of the battery, well, or cell group voltages, using statistics to determine a mean voltage and a standard deviation voltage, then comparing all of the measured voltages to the mean voltage. If the measured voltage deviates from the mean voltage by an arbitrary amount (number of standard deviations) corrective action can be implemented or an alarm signal given. The measurements need to be made rapidly enough to eliminate battery or cell voltage changes due to state of charge or temperature changes and, in most cases, require a computerized data collection/reduction system. Absolute high and/or low voltage limits can be included to prevent catastrophic events. The concept can be expanded to include similar temperature, pressure and/or battery current measurements in an array.

0450 Bi-Directional Control System for Energy Flow in a Solar Powered Flywheel
F. J. Nola
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 31 Jul 84 18p
PAT-APPL-6-636 459 Available from NTIS: price code A02
An energy storage system for a spacecraft is provided which employs a solar powered flywheel arrangement including a motor/generator which, in different operating modes, drives the flywheel and is driven thereby. A control circuit, including a threshold comparator, senses the output of a solar energy converter, and when a threshold voltage is exceeded thereby indicating the availability of solar power for the spececraft loads, activates a speed control loop including the motor/generator so as to accelerate the flywheel to a constant speed and thereby store mechanical energy, while also supplying energy from the solar converter to the loads. Under circumstances where solar energy is not available, the control circuit deactivates the speed control loop and activates a voltage control loop that provides for operation of the motor as generator so that mechanical energy from the flywheel is converted into electrical energy for supply to the spacecraft loads.

0451 Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
C. W. Walker, W. L. Wade, M. Binder, S. Gilman
Department of the Army, Washington, DC
Filed 22 Aug 85 9p
PAT-APPL-6-768 271 Available from NTIS: price code A02
A cathode is provided for use in high energy primary lithium-thionyl chloride cell systems or calcium-thionyl chloride cell systems. The cathode comprises an expanded metallic current collector screen into which has been pasted a mixture of a low surface area conductive carbon black and a high surface area conductive carbon black previously mixed with a binder.

0452 Cathode Including a Non Fluorinated Linear Chain Polymer as the Binder, Method of Making the Cathode, and Lithium Electrochemical Cell Containing the Cathode
E. J. Plichta, M. Salomon
Department of the Army, Washington, DC
Filed 27 Jun 85 11p
PAT-APPL-6-749 597 Available from NTIS: price code A02
Existing technology for the fabrication of cathodes for use in lithium primary and secondary cells utilizes Teflon as the binding material. Teflon or polytetrafluoroethylene is expensive through inert, and its use results in cathode structures of poor mechanical stability. These problems do not easily lend themselves to the large scale production of cathodes in manufacturing. This patent application pertains to a cathode suitable for use in a lithium electrochemical cell. It is made from a mixture of active cathode material, carbon, and non fluorinated linear chain polymer by a method including the steps of: (a) dissolving the non fluorinated linear chain polymer in a non polar solvent at a temperature near the melting point of the polymer; (b) adding the active cathode material and carbon and evaporating the solvent; and (C) grinding the dried mixture into a fine powder and making it into a cathode by pressing the powdered mixture onto both sides of an expanded metal screen and then cutting to the desired dimensions. The cathode can be combined with lithium as the anode and a solution of 0.8 mol 3/dm LiAlCl4 in a mixed organic solvent of 24 mass percent 4-butyrolactone in 1, 2 dimethoxyethane as the electrolyte to provide a mechnically stable, relatively inexpensive lithium electrochemical cell having good cell performance.

Charge Depletion Meter
See 0510

0453 Convective Heat Flow Probe
J. C. Dunn, H. C. Hardee, R. P. Striker
Department of Energy, Washington, DC
Filed 9 Jan 84 16p
PAT-APPL-6-569 086 Available from NTIS: price code A02
A convective heat flow probe device is provided which measures heat flow and fluid flow magnitude in the formation surrounding a borehole. The probe comprises an elongate housing adapted to be lowered down into the borehole; a plurality of heaters extending along the probe for heating the formation surrounding the borehole; a plurality of temperature sensors arranged around the periphery of the probe for measuring the temperature of the surrounding formation after heating thereof by the heater elements. The temperature sensors and heater elements are mounted in a

plurality of separate heater pads which are supported by the housing and which are adapted to be radially expanded into firm engagement with the walls of the borehole. The heat supplied by the heater elements and the temperatures measured by the temperature sensors are monitored and used in providing the desired measurements. The outer peripheral surfaces of the heater pads are configured as segments of a cylinder and form a full cylinder when taken together. A plurality of temperature sensors are located on each pad so as to extend along the length and across the width thereof, with a heating element being located in each pad beneath the temperature sensors. An expansion mechanism driven by a clamping motor provides expansion and retraction of the heater pads and expandable packet-type seals are provided along the probe above and below the heater pads.

0454 Counterpulse Railgun Energy Recovery Circuit
E. M. Honig
Department of Energy, Washington, DC
Filed 28 Sep 84 16p
PAT-APPL-6-655 490 Available from NTIS: price code A02
The invention presented relates to a high-power pulsing circuit and more particularly to a repetitive pulse inductive energy storage and transfer circuit for an electromagnetic launcher. In an electromagnetic launcher such as a railgun for propelling a projectile at high velocity, a counterpulse energy recovery circuit is employed to transfer stored inductive energy from a source inductor to the railgun inductance to propel the projectile down the railgun. Switching circuitry and an energy transfer capacitor are used to switch the energy back to the source inductor in readiness for a repetitive projectile propelling cycle.

0455 Coupling an Induction Motor Type Generator to AC Power Lines
F. J. Nola
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 31 Mar 83, patented 25 Sep 84 11p
PATENT-4 473 792 Available from Comm. of Patents
A system for coupling an induction motor type generator to an A.C. power line includes an electronic switch means that is controlled by a control system and is regulated to turn on at a relatively late point in each half cycle of its operation. The energizing power supplied by the line to the induction motor type generator is decreased and the net power delivered to the line is increased.

0456 Dual Electrochemical System
J. R. Moden, R. I. Bristol
Department of the Navy, Washington, DC
Filed 26 Jan 84, patented 22 Jan 85 4p
PATENT-4 495 256 Available from Comm. of Patents
This invention provides a means to increase the energy density of two electrochemical systems by using the by-product of each system as one of the necessary ingredients of the reactants of the other system. For example: (a)2Li/H2O2 yields 2LiOH, (b)2LiOH/3H2O2/2Al yields 2LiAlO2 /4H2O, where the LiOH from (a) is used in (b) and the H2Oo from (o) is used to fulfill the dilution requirements of (a).

0457 Electrolyte Reservoir for Carbonate Fuel Cells
C. D. Iacovangelo, D. A. Shores
Department of Energy, Washington, DC
Filed 23 May 84 13p
PAT-APPL-6-612 951 Available from NTIS: price code A02
An electrode for a carbonate fuel cell and method of making same are described wherein a substantially uniform mixture of an electrode-active powder and porous ceramic particles suitable for a carbonate fuel cell are formed into an electrode with the porous ceramic particles having pores in the range of from about 1 micron to about 3 microns, and a carbonate electrolyte is in the pores of the ceramic particles.

0458 Fast Reactor Power Plant Design Having Heat Pipe Heat Exchanger
P. R. Huebotter, G. A. McLennan
Department of Energy, Washington, DC
Filed 30 Aug 84 15p
PAT-APPL-6-645 654 Available from NTIS: price code A02
The invention relates to a pool-type fission reactor power plant design having a reactor vessel containing a primary coolant (such as liquid sodium), and a steam expansion device powered by a pressurized water/steam coolant system. Heat pipe means are disposed between the primary and water coolants to complete the heat transfer therebetween. The heat pipes are vertically oriented, penetrating the reactor deck and being directly submerged in the primary coolant. A U-tube or line passes through each heat pipe, extended over most of the length of the heat pipe and having its walls spaced from but closely proximate to and generally facing the surrounding walls of the heat pipe. The water/steam coolant loop includes each U-tube and the steam expansion device. A heat transfer medium (such as mercury) fills each of the heat pipes. The thermal energy from the primary coolant is transferred to the water coolant by isothermal evaporation-condensation of the heat transfer medium between the heat pipe and U-tube walls, the heat transfer medium moving within the heat pipe primarily transversely between these walls.

Fault Finder
See 0537

0459 Fuel Cell Electrode and Method of Preparation
T. D Kaun
Department of Energy, Washington, DC
Filed 2 Mar 84 18p
PAT-APPL-6-585 698 Available from NTIS: price code A02
A fuel cell having good resistance to compressive creep includes electrodes having a superstructure of porous electrically conductive foam with surface sections adjacent to opposing surfaces of an electrolyte matrix impregnated with electrode catalyst materials. The catalyst materials are affixed in sections contiguous to an inner major surface by sinter bonding, electrochemical bonding or restrictive interstitial spacing. The outer sections of the porous plaque thickness are reserved for gas distribution to the electrode catalyst. Oxidant and fuel gases can be separately manifolded into alternate sides of a fuel cell stack by sealing opposing edges of the porous plaques containing the anode material in one set of opposing side surfaces and sealing opposing edges of the porous plaque containing cathode material in alternate side surfaces of the stack.

0460 Fuel Cell Having Dual Electrode Anode or Cathode
E. Findl
Department of Energy, Washington, DC
Filed 10 Apr 84 23p
PAT-APPL-6-598 611 Available from NTIS. price code A02

A fuel cell that is characterized by including a dual electrode anode that is operable to simultaneously electro-oxidize a gaseous fuel and a liquid fuel. In alternative embodiments, a fuel cell having a single electrode anode is provided with a dual electrode cathode that is operable to simultaneously reduce a gaseous oxidant and a liquid oxidant to electro-oxidize a fuel supplied to the cell.

0461 Fuel Cell Separator Plate with Bellows-Type Sealing Flanges
G. A. Louis
Department of Energy, Washington, DC
Filed 29 May 84 15p
PAT-APPL-6-614 505 Available from NTIS: price code A02

A fuel cell separator includes a rectangular flat plate having two unitary upper sealing flanges respectively comprising opposite marginal edges of the plate folded upwardly and back on themselves and two lower sealing flanges respectively comprising the other two marginal edges of the plate folded downwardly and back on themselves. Each of the sealing flanges includes a flat wall spaced from the plate and substantially parallel thereto and two accordion-pleated side walls, one of which interconnects the flat wall with the plate and the other of which steps just short of the plate, these side walls affording resilient compressibility to the sealing flange in a direction generally normal to the plane of the plate. Four corner members close the ends of the sealing flanges. An additional resiliently compressible reinforcing member may be inserted in the passages formed by each of the sealing flanges with the plate.

0462 Fuel Cell Separator with Compressible Sealing Flanges
A. P. Mientek
Department of Energy, Washington, DC
Filed 30 Mar 84 18p
PAT-APPL-6-595 012 Available from NTIS: price code A02

A separator for separating adjacent fuel cells in a stack of such cells includes a flat, rectangular, gas-impermeable plate disposed between adjacent cells and having two opposite side margins thereof folded back over one side of the plate to form two first seal flanges and having the other side margins thereof folded back over the opposite side of the plate to form two second seal flanges each of the seal flanges cooperating with the plate to define a channel in which is disposed a resiliently compressible stack of thin metal sheets. The two first seal flanges cooperate with the electrolyte matrix of one of the cells to form a gas-impermeable seal between an electrode of the one cell and one of two reactant gas manifolds. The second seal flanges cooperate with the electrolyte matrix of the other cell for forming a gas-impermeable seal between an electrode of the other cell and the other of the two reactant gas manifolds. The seal flanges cooperate with the associated compressible stacks of sheets for maintaining a spacing between the plate and the electrolyte matrices while accommodating variation of that spacing.

Gas Hydrate Cool Storage System
See 0407

Gas Recirculator for Acyclic Machines
See 0308

High Thermal Power Density Heat Transfer Apparatus Providing Electrical Isolation at High Temperature Using Heat Pipes
See 0412

0463 Improved Cell Design for Lithium Alloy/Metal Sulfide Battery
T. D. Kaun
Department of Energy, Washington, DC
Filed 30 Mar 84 24p
PAT-APPL-6-595 203 Available from NTIS: price code A02

The disclosed lithium alloy/iron sulfide cell design provides loop-like positive and negative sheet metal current collectors electrically insulated from one another by separator means, the positive collector being located outwardly of the negative collector. The collectors are initially secured within an open-ended cell housing, which allows for collector pretesting for electrical shorts prior to adding any electrode materials and/or electrolyte to the cell. Separate chambers are defined outwardly of the positive collector and inwardly of the negative collector open respectively in opposite directions toward the open ends of the cell housing; and positive and negative electrode materials can be extruded into these respective chambers via the opposite open housing ends. The chambers and cell housing ends can then be sealed closed. A cross wall structurally reinforces the cell housing and also thereby defines two cavities, and paired positive and negative collectors are disposed in each cavity and electrically connected in parallel. The cell design provides for a high specific energy output and improved operating life in that any charge-discharge cycle swelling of the positive electrode material will be inwardly against only the positive collector to minimize shorts caused by the collectors shifting relative to one another.

0464 Integrated Current Collector and Catalyst Support
L. J. Bregoli
Department of Energy, Washington, DC
Filed 17 Oct 84 17p
PAT-APPL-6-661 851 Available from NTIS: price code A02

An integrated current collecting electrode for a molten carbonate fuel cell includes a corrugated metal conductive strip positioned in contact with a catalyst layer. The corrugations of the metal strip form a plurality of gas channels immediately adjacent the surface of the catalyst through which a reactant gas flows. Each channel is filled with a particulate material to maintain separation between the metal strip and the catalyst in ensuring gas channel integrity. The catalyst may be in the form of a compacted, particulate material provided the particle size of the material within the gas channels is larger than that of the catalyst particles to prevent catalyst migration to the metal conductor and provide reactant gas access to the catalyst layer. The gas channels formed by the corrugations of the metal strip are arranged in an offset pattern along the direction of gas flow for improved reactant gas distribution to the catalyst layer. The particulate material positioned within the gas flow channels may be a ceramic conductor such as a perovskite or a spinel for enhanced current collection.

0465 IREB (Intense Relativistic Electron Beam) Converter to AC Pulses
M. Friedman, V. Serlin
Department of the Navy, Washington, DC
Filed 17 Oct 84 19p
PAT-APPL-6-661 838 Available from NTIS: price code A02
A device for converting the kinetic energy of an intense relativistic electron beam (IREB) into trains of multigigawatt AC electrical pulses comprising a foilless diode for generating an IREB and injecting the IREB into one end of a drift tube. The device further includes a modulating circuit for modulating the IREB current while in the drift tube to obtain longitudinally spaced bunches of electrons, and a coaxial transmission line with the end of its center conductor disposed across the other end of the drift tube in the path of the IREB. A gap is disposed between the end of the drift tube and the end of the center conductor. The modulated IREB induces a voltage in the coaxial transmission line. This voltage appears across the gap to slow down the electrons and to convert the kinetic energy of the IREB into electrical energy that propagates along the coaxial transmission line.

0466 Lithium Aluminum/Iron Sulfide Battery Having Lithium Aluminum and Silicon as Negative Electrode
M. Gilbert, T. Kaun
Department of Energy, Washington, DC
Filed 20 Jan 84 23p
PAT-APPL-6-572 345 Available from NTIS: price code A02
A method of making a negative electrode, the electrode made thereby and a secondary electrochemical cell using the electrode. Silicon powder is mixed with powdered electroactive material, such as the lithium-aluminum eutectic, to provide an improved electrode and cell.

0467 Method for Isolating Two Aquifers in a Single Borehole
P. W. Burklund
Department of Energy, Washington, DC
Filed 20 Jan 84 23p
PAT-APPL-6-572 346 Available from NTIS: price code A02
A method for isolating and individually instrumenting separate aquifers within a single borehole is disclosed. A borehole is first drilled from the ground surface, through an upper aquifer, and into a separating confining bed. A casing, having upper and lower sections separated by a coupling collar, is lowered into the borehole. The borehole is grouted in the vicinity of the lower section of the casing. A borehole is then drilled through the grout plug and into a lower aquifer. After the lower aquifer is instrumented, the borehole is grouted back into the lower portion of the casing. Then the upper section of the casing is unscrewed via the coupling collar and removed from the borehole. Finally, instrumentation is added to the upper aquifer and the borehole is appropriately grouted. The coupling collar is designed to have upper right-hand screw threads and lower left-hand screw thread, whereby the sections of the casing can be readily separated.

Method of Preparing Thin Porous Sheets of Ceramic Material
See 0845

0468 Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
M. Binder, C. W. Walker, E. R. Petersen, W. L. Wade, S. Gilman
Department of the Army, Washington, DC
Filed 25 Mar 85 12p
PAT-APPL-6-715 808 Available from NTIS: price code A02
Carbon black powder is pretreated with acetone or methanol prior to cathode fabrication to improve the cathode operating voltage and increase the cathode life of lithium sulfuryl chloride electrochemical cells.

0469 Molten Carbonate Fuel Cell Separator
R. C. Nickols
Department of Energy, Washington, DC
Filed 17 Oct 84 24p
PAT-APPL-6-661 850 Available from NTIS: price code A02
In a stacked array of molten carbonate fuel cells, a fuel cell separator is positioned between adjacent fuel cells to provide isolation as well as a conductive path therebetween. The center portion of the fuel cell separator includes a generally rectangular, flat, electrical conductor. Around the periphery of the flat portion of the separator are positioned a plurality of elongated resilient flanges which form a gas-tight seal around the edges of the fuel cell. With one elongated flange resiliently engaging a respective edge of the center portion of the separator, the sealing flanges, which are preferably comprised of a noncorrosive material such as an alloy of yttrium, iron, aluminum or chromium, form a tight-fitting wet seal for confining the corrosive elements of the fuel cell therein. This arrangement permits a good conductive material which may be highly subject to corrosion and dissolution to be used in combination with a corrosion-resistant material in the fuel cell separator of a molten carbonate fuel cell for improved fuel cell conductivity and a gas-tight wet seal.

0470 Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
R. F. Gahn, N. H. Hagedorn
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 20 Aug 84 14p
PAT-APPL-6-642 310 Available from NTIS: price code A02
A redox cell which operates at elevated temperatures and which utilizes the same two metal couples in each of the two reactant fluids is disclosed. Each fluid includes a bismuth salt and may also include a lead salt. A low cost, cation permselective membrane separates the reactant fluids.

0471 Nickel-Cadmium Battery Conditioner and Tester Apparatus
D. C. Kinney
Department of the Air Force, Washington, DC
Filed 30 Sep 82, patented 14 May 85 5p
PATENT-4 517 517 Available from Comm. of Patents
This provides a battery test apparatus for determining the state of quality of a nickel-cadmium battery. The battery test apparatus provides a battery discharge circuit that discharges the battery under test until a specified terminal voltage level is reached wherein the discharge cycle is automatically terminated. Since a visual indication is provid-

ed at the initiation of the discharge cycle and visual indication is provided at the end of the test cycle, the elapsed time for the discharge test is accurately measured. If the time required to discharge the battery to the predetermined level exceeds a certain value, such as 48 minutes the level exceeds a certain value, such as 48 minutes the quallity of the battery is acceptable. The battery test apparatus also includes a reconditioning switch for recharging acceptable batteries to full charge capacity.

0472 Output Responsive Field Control for Wind-Driven Alternators and Generators
L. H. Soderholm
Department of Agriculture, Washington, DC
Filed 12 Nov 84 12p
PAT-APPL-6-680 615 Available from NTIS: price code A02
The field voltage of a wind-driven alternator or generator is automatically controlled in response to the output voltage developed in the load with the objective of always maintaining the maximum power output. In this manner, the tip-speed/wind-speed ratio is indirectly maintained at an optimum constant value, thereby optimizing the performance of the machine without the need to continuously and precisely monitor the wind speed and rotational speed.

0473 Overpulse Railgun Energy Recovery Circuit
E. M. Honig
Department of Energy, Washington, DC
Filed 28 Sep 84 17p
PAT-APPL-6-655 593 Available from NTIS: price code A02
The invention presented relates to a high-power pulsing circuit and more particularly to a repetitive pulse inductive energy storage and transfer circuit for an electromagnetic launcher. In an electromagnetic launcher such as a railgun for propelling a projectile at high velocity, an overpulse energy recovery circuit is employed to transfer stored inductive energy from a source inductor to the railgun inductance to propel the projectile down the railgun. Switching circuitry and an energy transfer capacitor are used to switch the energy back to the source inductor in readiness for a repetitive projectile propelling cycle.

0474 Polyethylene Imine-Metal Salt Solid Electrolyte
G. T. Davis, C. K. Chiang, T. Takahashi
Department of the Navy, Washington, DC
Filed 28 Feb 85 8p
PAT-APPL-6-706 811 Available from NTIS: price code A02
This patent application pertains to battery electrolytes. Accordingly, it is an object of invention to provide new solid electrolytes. Another object of this invention is to provide new polymeric electrolytes. A further object of this invention is to provide polymeric electrolytes using a wider variety of metal salts. These and other objects of this invention are accomplished by providing; A solid polymer electrolyte comprising: a matrix of linear poly(ethylene amine) having the formula (-CH2CH2NH-)n; and a metal salt which is LiI, LiClO4, NaI, NaBr, KI, CsSCN, AgNO3, CuCl1, CoCl2, or Mg(ClO4)2, wherein the salt is dissolved in and distributed throughout the poly(ethylene imine) matrix and from more than zero to 0.10 moles of salt are used per mole of monomer repeat unit, (-CH2CH2NH-).

Polymer Blends for Use in Photoelectrochemical Cells for Conversion of Solar Energy to Electricity
See 0435

0475 Reactant Pressure Differential Control for Fuel Cell Gases
A. P. Grasso
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 1 Jul 82, patented 9 Apr 85 5p
PATENT-4 509 548 Available from Comm. of Patents
A pair of spool valves are described which are balanced between pressures of reactant gases supplied to a fuel cell power plant. The pressure differences are controlled between the gases so as to maintain those pressures substantially in the proportions necessary for operation of the fuel cell.

0476 Rechargeable Lithium Cell
M. Salomon, E. J. Plichta
Department of the Army, Washington, DC
Filed 27 Sep 84 9p
PAT-APPL-6-655 114 Available from NTIS: price code A02
The general object of this invention is to provide an improved rechargeable lithium cell. A more specific object of the invention is to provide a rechargeable lithium cell having an improved low temperature performance and rate capability. It has now been found that the aformentioned objects can be attained using lithium as the anode, a solution of a lithium salt such as LiF6 or LiA1C14 in a mixed organic solvent as the electrolyte and a lithium intercalating cathode.

0477 Rechargeable Lithium-Organic Electrolyte Battery Having Overcharge Protection and Method of Providing Overcharge Protection for a Lithium-Organic Electrolyte Battery
W. K. Behl
Department of the Army, Washington, DC
Filed 13 Jun 85 7p
PAT-APPL-6-744 344 Available from NTIS: price code A02
The general object of this invention is to provide overcharge protection for rechargeable lithium-organic electrolyte batteries. A further object is to prevent the undesireable oxidation of organic solvents during the overcharge of the rechargeable lithium-organic electrolyte batteries. It has now been found that the aforementioned objects can be attained by including lithium bromide in the electrolyte to provide overcharge protection during the overcharging of rechargeable lithium-organic electrolyte cells. More particularly, it has been found that during overcharging, lithium bromide will be oxidized at lower potentials than the organic solvent and thereby provide overcharge protection and prevent the undesireable oxidation of organic solvents.

0478 Secondary Battery Containing Zinc Electrode with Modified Separator and Method
D. S. Poa
Department of Energy, Washington, DC
Filed 16 Feb 84 20p
PAT-APPL-6-580 982 Available from NTIS: price code A02
A battery containing a zinc electrode with a porous separator between the anode and cathode. The separator is a microporous substrate carrying therewith an organic solvent of benzene, toluene or xylene with a tertiary organic amine therein, wherein the tertiary amine has three carbon chains each containing from six to eight carbon atoms. The separator reduces the rate of zinc dentrite growth in the separator during battery operation prolonging battery life by pre-

venting short circuits. A method of making the separator is also disclosed.

0479 Series-Counterpulse Repetitive-Pulse Inductive Storage Circuit
E. M. Honig
Department of Energy, Washington, DC
Filed 5 Jun 84 14p
PAT-APPL-6-617 658 Available from NTIS: price code A02
A high-power series-counterpulse repetitive-pulse inductive energy storage and transfer circuit includes an opening switch, a main energy storage coil, and a counterpulse capacitor. The local pulse is initiated simultaneously with the initiation of the counterpulse used to turn the opening switch off. There is no delay from command to output pulse. During the load pulse, the counterpulse capacitor is automatically charged with sufficient energy to accomplish the load counterpulse which terminates the load pulse and turns the load switch off. When the main opening switch is reclosed to terminate the load pulse, the counterpulse capacitor discharges through the load, causing a rapid, sharp cutoff of the load pulse as well as recovering any energy remaining in the load inductance. The counterpulse capacitor is recharged to its original condition by the main energy storage coil after the load pulse is over, not before it begins.

Stable n-CuINSe/sub 2/Iodide-Iodine Photoelectrochemical Cell
See 0444

State-of-Charge Coulometer
See 0631

0480 Superconducting Magnetic Energy Storage for Asynchronous Electrical Systems
H. J. Boenig
Department of Energy, Washington, DC
Filed 16 May 84 11p
PAT-APPL-6-610 904 Available from NTIS: price code A02
It is an object of the present invention to provide superconducting magnetic energy storage for a plurality of asynchronous electrical systems. It is a further object of the present invention to provide load leveling and stability improvement in a plurality of independent ac systems using a single superconducting magnetic energy storage coil.

0481 Thermal Protection Apparatus
G. A. Bennett, M. G. Elder, J. E. Kemme
Department of Energy, Washington, DC
Filed 20 Mar 84 7p
PAT-APPL-6-591 650 Available from NTIS: price code A02
The disclosure is directed to an apparatus for thermally protecting sensitive components in tools used in a geothermal borehole. The apparatus comprises a Dewar within a housing. The Dewar contains heat pipes such as brass heat pipes for thermally conducting heat from heat sensitive components such as electronics to a heat sink such as ice.

0482 Thermal Well-Test Method
C. F. Tsang, C. A. Doughty
Department of Energy, Washington, DC
Filed 24 Feb 84 33p
PAT-APPL-6-583 451 Available from NTIS: price code A03
A well-test method involving injection of hot (or cold) water into a groundwater aquifer, or injecting cold water into a geothermal reservoir is disclosed. By making temperature measurements at various depths in one or more observation wells, certain properties of the aquifer are determined. These properties, not obtainable from conventional well test procedures, include the permeability anisotropy, and layering in the aquifer, and in-situ thermal properties. The temperature measurements at various depths are obtained from thermistors mounted in the observation wells.

0483 Thermochemical Energy Transport Using a Hydrogen Rich Working Fluid
T. A. Chubb
Department of the Navy, Washington, DC
Filed 13 May 82, patented 27 Nov 84 8p
PATENT-4 484 618 Available from Comm. of Patents
This patent discloses a thermochemical transport system for energy in which heat is transported from the point of receiving to the point of delivery by a working fluid which undergoes endothermic reaction by methane-steam reforming at the heat receiving end and exothermic methanation at the heat delivery end. The working fluid is a mixture of methane, steam, carbon monoxide, carbon dioxide, and hydrogen, for which the ratio of atomic oxygen to atomic hydrogen to atomic carbon is $2y/2z/4$ where y is between 1 and 5 and z is between 0.1 and 5.

0484 Thermoelectric Generator and Method for the Fabrication Thereof
D. K. Benson, C. E. Tracy
Department of Energy, Washington, DC
Filed 1 Aug 84 23p
PAT-APPL-6-636 751 Available from NTIS: price code A02
A thermoelectric generator using semiconductor elements for responding to a temperature gradient to produce electrical energy with all of the semiconductor elements being of the same type is disclosed. A continuous process for forming substrates on which the semiconductor elements and superstrates are deposited and a process for forming the semiconductor elements on the substrates are also disclosed. The substrates with the semiconductor elements thereon are combined with superstrates to form modules for use as thermoelectric generators.

Wave Powered Buoy Generator
See 0739

HYDRAULIC & PNEUMATIC EQUIPMENT

0485 Low Temperature Inflator Apparatus
J. J. Esposito
Department of the Navy, Washington, DC
Filed 2 May 85 9p
PAT-APPL-6-729 725 Available from NTIS: price code A02
This invention relates to inflator apparatus for inflating emergency flotation gear such as life rafts and life jackets; and more particularly to an inflator for flotation gear which may be stored at, and operated in, extremely low temperatures. Liquid Co2 (carbon dioxide) cartridges have been used for many years as the main source of pressurized gas for inflating various types of inflatable life saving devices such as rafts, vests, and jackets. Emergency use of these devices by downed aircrewman has occurred mostly in temperate zones. However, these situations now occur more frequently in the arctic region where temperatures below -

20 F are not uncommon. At these low temperatures, liquid CO2 changes too slowly to the gaseous phase to provide immediate buoyancy. A rapid change is especially needed in a life raft to enable a downed person in frigid water to board as soon as possible. The longer he or she remains exposed to the cold water awaiting the formation of a boardable raft, the more likely hypothermia will set in. Raft inflation time in excess of five minutes has been observed when CO2 cartridges were stored in an aircraft at sub-zero temperatures and then activated in water at 32 F. Consequently, lives have been needlessly lost. In lieu of liquid CO2 cartridges, solid pyrotechnic inflators have been tried which generate gas from a compacted solid material, but the gas of combustion does not attain the pressure level needed for buoyancy of inflatable gear.

86 Multiple Rate Shock Isolator Damping Valve
R. M. Foster
Department of the Air Force, Washington, DC
Filed 19 Sep 84 21p
PAT-APPL-6-651 961 Available from NTIS: price code A02
An improved direct acting, hydraulic shock isolator system including a novel damping valve exhibiting variable damping characteristics depending on degree of valve extension is described which comprises a hydraulic cylinder defining a closed reservoir at each end and containing a hydraulic fluid, a piston interconnecting the structural members between which relative movement is to be damped and disposed for slidable movement within the cylinder, the piston having first and second axially spaced portions sized for sealing engagement with the inner surface of the cylinder and connected by an intermediate third axial portion of reduced outer diametric size, the first and second portions each including a predetermined number of axial holes of predetermined size for displacement of fluid from one side of the piston to the other in response to movement of the piston through the fluid, and an annular member of outer diameter smaller than the first and second portions and slidably disposed on the third piston portion and restrained for axial movement between limits defined by the confronting surfaces of the first and second portions, the annular member including a pair of confronting peripheral flanges, each including axial holes smaller in size and corresponding in number of the axial holes in the first and second portions and disposed in substantially registering alignment therewith.

87 Pneumatic Actuator Device
R. W. Gazzera
Department of the Air Force, Washington, DC
Filed 16 Sep 82, patented 16 Apr 85 7p
PATENT-4 510 846 Available from Comm. of Patents
A closed center four-way poppet actuator control device is incorporated into a pneumatic actuation system for controlling the movement of flight surfaces. The closed center four-way poppet actuator control device has a housing, a pair of two-way poppet valves in the housing, a rocker arm assembly mounted on the housing and connected to the pair of two-way poppet valves, and a diaphragm assembly also mounted in the housing and in contact with the two-way valves. A torquemotor-driver assembly connected to the diaphragm assembly actuates the two-way valves as determined by control symbols. The rocker arm causes the two-way valves to function oppositely each other: one allows high pressure gas to be input to a lobe motor acutator while the other allows gas to be ouput from the lobe motor actuator. Each two-way valve has a cylindrical poppet valve for inletting the gas to the actuator and a disk poppet valve for outputting the gas to the actuator and a disk poppet valve for outputting the gas from the actuator to a vent. The actuator causes movement of the flight surfaces through a gearbox. A velocity transducer monitors this movement and transmits this movement to an electronic control unit which senmds control signals to drive the torque motor-driver assembly that actuates said actuator control device.

0488 Powered Articulated Headrest System
A. B. McDonald, J. T. Mannix
Department of the Air Force, Washington, DC
Filed 12 Nov 81, patented 21 Aug 84 7p
PATENT-4 466 662 Available from Comm. of Patents
This patent is for a powered articulated headrest system for use with a seat structure having a backrest, such as the ejection seat of a high performance aircraft, e.g., a combat aircraft. The headrest system includes: a headrest assembly which is movably connected to the backrest; and, an electro-hydraulic actuator assembly for moving the headrest from an original (and normal) position above the backrest from an original (and normal) position above the backrest to any one of an infinite variety of positions which are rearward and downward of the headrest, and for moving the headrest from these other positions to the original position. The actuator assembly is controlled by the occupant of the seat, e.g., the pilot of the aircraft. When the headrest is moved rearwardly, unlike the prior art, the width of the headrest decreases thereby reducing any interference with aft visibility, and the height of the headrest also decreases thereby further reducing any interference with aft visibility and also eliminating any scrubbing action between the headrest and the head of the occupant of the seat.

0489 Tire Deflation Mechanism
E. Kleemann
Department of the Army, Washington, DC
Filed 7 Nov 84 10p
PAT-APPL-6-669 131 Available from NTIS: price code A02
A hand held mechanism is described that can be applied to a conventional tire inflation valve on a vehicle tire to facilitate a tire deflation operation. The mechanism includes a rod-like element that automatically engages a tire check valve to open said valve for tire venting purposes. The mechanism also includes a hollow tubular called wall structure adapted to receive the sensing head of a conventional pressure gage, whereby the progress of the tire-deflation operation can be ascertained, as necessary to properly terminate the operation at a desired tire pressure. Mechanisms of the described type can be utilized on all wheels of a multi-wheeled vehicle to permit simultaneously deflation of all vehicle tires, thereby greatly reducing the time required to achieve a total tire deflation operation.

0490 Tire Inflation/Deflation System
L. A. Gant
Department of the Army, Washington, DC
Filed 16 Nov 84 14p
PAT-APPL-6-672 056 Available from NTIS: price code A02
An automatic tire inflation/deflation system is described for a vehicle with pneumatic tires. The system may be incorporated into existing vehicles without modification of the axles, wheels or tires. A pressure-responsive bellows is utilized at each wheel to open or close the existing tire valve

in accordance with air pressure valves applies to the bellows exterior surface. A selector valve at the driver's station permits the human driver to remotely control the tire inflation or deflation process. During normal run operations, the air passage system is depressurized.

INSTRUMENTATION & TEST EQUIPMENT

0491 Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
S. H. Sheen, A. C. Raptis
Department of Energy, Washington, DC
Filed 14 May 84 14p
PAT-APPL-6-609 685 Available from NTIS: price code A02
Apparatus for measuring particle velocity in a solid-gas flow within a pipe includes: first and second transmitting transducers for transmitting first and second ultrasonic signals into the pipe at first and second locations, respectively, along the pipe; an acoustic decoupler, positioned between said first and second transmitting transducers, for acoustically isolating said first and second signals from one another; first and second detecting transducers for detecting said first and second signals and for generating first and second detected signals; and means for cross-correlating said first and second output signals.

0492 Acoustic Scintillation Liquid Flow Measurement
S. F. Clifford, D. M. Farmer
Department of Commerce, Washington, DC
Filed 2 Jul 85 29p
PAT-APPL-6-751 118 Available from NTIS: price code A03
This invention relates to fluid flow measurement, and, more particularly, relates to acoustic scintillation fluid flow measurement. A system and method are disclosed for acoustic scintillation liquid flow measurement. Measurement is carried out by acoustic beams transmitted perpendicular to the direction of the component of liquid flow to be measured.

Active Dispersion Control for a Doppler Broadened Laser
See 0988

0493 Adjustable Indicating Device for Load Position
C. Heller
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 20 Dec 84 10p
PAT-APPL-6-684 194 Available from NTIS: price code A02
An indicating device designed to provide an electrical signal relative to the position of a load is described. The device has a central housing with two wing structures on each side which support conventional switch means having cantilevered arms. Extending through the housing is a movable shaft that is spring biased to a forward extended position and adapted to respond against a load being positioned. The rear end of the movable shaft has an adjustable cam means which acts upon the cantilevered ams to cause a switching action upon shifting of the movable shaft by a load.

0494 Angular Measurement System
J. R. Currie, R. Kissel
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 3 Oct 84 13p
PAT-APPL-6-657 309 Available from NTIS: price code A02
A system for the measurement of shaft angles is disclosed wherein a synchro resolver is sequentially pulsed, and alternately, a sine and then a cosine representive voltage output of it are sampled. Two like type, sine or cosine, succeeding outputs (V sub S1, V sub S2) are averaged and algebraically related to the opposite type output pulse (V sub c) occurring between the averaged pulses to provide a precise indication of the angle of a shaft coupled to the resolver at the instant of the occurrence of the intermediately occurring pulse (V sub c).

0495 Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
D. A. Cremers, L. J. Radziemski, T. R. Loree
Department of Energy, Washington, DC
Filed 1 May 84 24p
PAT-APPL-6-606 037 Available from NTIS: price code A02
A method and apparatus are disclosed for the qualitative and quantitative spectroscopic investigation of elements present in a liquid sample using the laser spark. A series of temporally closely spaced spark pairs is induced in the liquid sample utilizing pulsed electromagnetic radiation from a pair of lasers. The light pulses are not significantly absorbed by the sample so that the sparks occur inside of the liquid. The emitted light from the breakdown events is spectrally and temporally resolved, and the time period between the two laser pulses in each spark pair is adjusted to maximize the signal-to-noise ratio of the emitted signals. In comparison with the single pulse technique, a substantial reduction in the limits of detectability for many elements has been demonstrated. Narrowing of spectral features results in improved discrimination against interfering species.

0496 Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
K. A. Yamakawa
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 8 Sep 82, patented 19 Feb 85 10p
PATENT-4 500 492 Available from Comm. of Patents
An apparatus and method is disclosed for keeping interior walls of a reaction vessel free of undesirable deposits of solid materials in gas-to-solid reactions. The apparatus includes a movable cleaning head which is configured to be substantially complementary to the interior contour of the walls of the reaction vessel. The head ejects a stream of gas with a relatively high velocity into a narrow space between the head and the walls. The head is moved substantially continuously to at least intermittently blow the stream of gas to substantially the entire surface of the walls wherein undesirable solid deposition is likely to occur. The disclosed apparatus and process is particularly useful for keeping the walls of a free-space silane-gas-to-solid-silicon reactor free of undesirable silicon deposits.

0497 Apparatus for Determining the Liquid Water Content of a Gas
H. E. Gerber, B. G. Ulfers
Department of the Navy, Washington, DC
Filed 18 Apr 84 19p
PAT-APPL-6-601 516 Available from NTIS: price code A02
An apparatus for determining the liquid water content (LWC) of a sample gas having water droplets suspended therein includes a light source for pasing a collimated light beam through the sample gas, and a sensor for detecting the light scattered by the water droplets. The sensor includes a photodetector having a planar light sensitive surface positioned to receive scattered light. A light trap is also provided between the photodetector and the light source for blocking nonscattered light in the light beam from the photodetector. The light flux detected by the photodetector is proportional to LWC.

0498 Apparatus for Encapsulating Additives in Resealed Erythrocytes
J. R. DeLoach, R. L. Harris, R. T. Mayer, G. M. Ihler
Department of Agriculture, Washington, DC
Filed 21 Dec 81, patented 14 May 85 7p
PATENT-4 517 080 Available from Comm. of Patents
An apparatus for encapsulating additives in resealed erythrocytes using dialysis is disclosed. A specimen holder, provided with vertical rotation means, is immersed in a dialyzing solution. Means are also provided for: agitation, cooling, heating, temperature control and measurement of the dialyzing solution.

0499 Apparatus for Generating a Focusable and Scannable Ultrasonic Beam for Non-Destructive Examination
R. J. von Gulfeld, S. S. Wang
Department of the Navy, Washington, DC
Filed 1 Sep 83 15p
PAT-APPL-6-528 708 Available from NTIS: price code A02
An apparatus for generating a focusable and scannable ultrasonic beam is described for use in nondestructive internal examination of an object. In one embodiment an optical mask modifies a pulsed light beam to form an optical zone pattern. The zone pattern is imaged on the surface of an optically absorbing thermoelastic layer in contact with a propagation medium. An ultrasonic beam is thereby generated which focuses at a point in an object submerged in the propagation medium. An optical lens and a mirror respectively focus and scan the modified light beam, whereby the ultrasonic beam is also focused and scanned. A second embodiment utilizes an acousto-optic modulator to modify the light beam and cause scanning and focusing of the ultrasonic beam. Suitable detectors and instrumentation may be provided to analyze the ultrasonic beam after it has traversed the object under examination.

0500 Apparatus for Non-Destructive Inspection of Blind Holes
T. Smith
Department of the Air Force, Washington, DC
Filed 7 Jan 85 9p
PAT-APPL-6-689 115 Available from NTIS: price code A02
A miniaturized ellipsometric testing device comprising first means for precisely impinging a prescribed beam of light upon a surface to be tested and second means for capturing the reflected impinged beam only within prescribed limits. The value of the reflected impinged beam, which is transmissible to a detector, is used in determination of the validity of the surface tested; the miniaturized device is couplable to a laser light source and said detector by means of respective fiber optic cables.

0501 Apparatus for Sampling and Characterizing Aerosols
P. F. Dunn, J. E. Herceg, R. H. Klocksieben
Department of Energy, Washington, DC
Filed 11 Apr 84 17p
PAT-APPL-6-599 110 Available from NTIS: price code A02
Apparatus for sampling and characterizing aerosols having a wide particle size range at relatively low velocities may comprise a chamber having an inlet and an outlet, the chamber including: a plurality of vertically stacked, successive particle collection stages; each collection stage includes a separator plate and a channel guide mounted transverse to the separator plate, defining a labyrinthine flow path across the collection stage. An opening in each separator plate provides a path for the aerosols from one collection stage to the next. Mounted within each collection stage are one or more particle collection frames.

0502 Atmospheric Transmissometer
M. Geller
Department of the Navy, Washington, DC
Filed 1 Jun 82, patented 4 Sep 84 13p
PATENT-4 469 443 Available from Comm. of Patents
An apparatus and method is described for separately measuring the optical intensities of the following: a sample beam having traversed a sample medium; a backscattered beam having been backscattered by the sample medium; a composite beam composed of the sample beam plus a reference beam having traversed a reference medium; and a second composite beam composed of the backscattered beam plus the reference beam. Measurements of these parameters is accomplished through the use of a linearly polarized source beam whose plane of polarization may be rotated between two orthogonal planes. The source beam is split into the sample and reference beams. The plane of polarization of the sample beam is caused to be rotated 90 degrees from the plane of polarization of the backscattered beam after interaction with the sample medium. The plane of polarization of the reference beam is selectively controlled between two orthogonal planes such that when combined with the sample beam and backscattered beam a polarization analyzer will allow passage of only those portions with a preselected plane of polarization for measurement and analysis of the light intensity.

0503 Automated Calibration Technique for Non-Field Perturbing (Electrically Small) Electromagnetic Field Sensors
B. R. Strickland, G. R. Edlin
Department of the Army, Washington, DC
Filed 7 Aug 85 14p
PAT-APPL-6-763 362 Available from NTIS: price code A02
A small field probe is calibrated by selectively varying the field intensity and frequency and recording the data in arrays with each incremental step. The arrays are built by selectively varying one parameter while maintaining another constant. In this way coefficients of the equation for the calibration of the probe is arrived.

0504 Beam Current Sensor
M. Kuchnir, F. E. Mills
Department of Energy, Washington, DC
Filed 28 Sep 84 24p
PAT-APPL-6-655 487 Available from NTIS: price code A02
A current sensor for measuring the dc component of a beam of charged particles employs a superconducting pick-up loop probe, with twisted superconducting leads in combination with a Superconducting Quantum Interference Device (SQUID) detector. The pick-up probe is in the form of a single-turn loop, or a cylindrical toroid, through which the beam is directed and within which a first magnetic flux is excluded by the Meisner effect. The SQUID detector acts as a flux-to-voltage converter in providing a current to the pick-up loop so as to establish a second magnetic flux within the electrode which nulls out the first magnetic flux. A feedback voltage within the SQUID detector represents the beam current of the particles which transit the pick-up loop. Meisner effect currents prevent changes in the magnetic field within the toroidal pick-up loop and produce a current signal independent of the beam's cross-section and its position within the toroid, while the combination of superconducting elements provides current measurement sensitivities in the nano-ampere range.

0505 Biological Sensor for the Detection of Toxicants
A. v. Stiffey, N. L. Jarvis, H. Wohltjen
Department of the Navy, Washington, DC
Filed 1 Oct 84 21p
PAT-APPL-6-656 208 Available from NTIS: price code A02
A method and an apparatus are described for rapidly detecting toxicants via the use of a first carbon dioxide sensing cell and a second reference carbon dioxide sensing cell, with each sensing cell including a first chamber and a second chamber, separated by a carbon dioxide permeable membrane, and a pH sensor disposed in each of the second chambers. The method includes the step of placing distilled water in the first chamber of each cell, and allowing its dissolved carbon dioxide to become equilibrated with the water in the second chamber, from which it is separated by the carbon dioxide permeable membrane. Next, exact amounts of a microorganism and sugar are added to small dishes in the first chambers along with control vegetation for one dish and vegetation to be tested to the other dish. Then the first chambers are completely filled with distilled water and the dishes are agitated to facilitate a solution of microorganisms and sugar.

Bragg Cell Spectrum Analyizer Specification
See 1031

0506 Calibration Method for Acoustic Scattering Measurements Using a Spherical Target
L. R. Dragonette, L. J. Frank, S. K. Numrich
Department of the Navy, Washington, DC
Filed 31 Mar 82, patented 9 Oct 84 9p
PATENT-4 476 549 Available from Comm. of Patents
This patent discloses a method for calibrating acoustic backscattering instrumentation utilizing a spherical body as a standard target. A spherical body made of high specific acoustic impedance material, such as tungsten carbide, is positioned a given distance from a source/receiver transducer which is energized to produce a short acoustic pulse directed toward the sphere. Acoustic signals reflected from the sphere are detected by the transducer and processed in the time domain to separate the rigid portion of the return from the elastic portions. The rigid portion is corrected for the transducer to sphere distance, the reflectivity of the sphere, and for the radius of the sphere. The resultant corrected signal represents the incident acoustic pulse produced by the transducer.

0507 Capacitance Measuring Device
W. H. Andrews
Department of Energy, Washington, DC
Filed 1 Aug 84 13p
PAT-APPL-6-636 631 Available from NTIS: price code A02
A capacitance measuring circuit is provided in which an unknown capacitance is measured by comparing the charge stored in the unknown capacitor with that stored in a known capacitance. Equal and opposite voltages are repetitively simultaneously switched onto the capacitors through an electronic switch driven by a pulse generator to charge the capacitors during the "on" portion of the cycle. The stored charge is compared by summing discharge currents flowing through matched resistors at the input of a current sensor during the "off" portion of the switching cycle. The net current measured is thus proportional to the difference in value of the two capacitances. The circuit is capable of providing much needed accuracy and stability to a great variety of capacitance-based measurement devices at a relatively low cost.

0508 Captive Volume Device as a Safe Life Monitor
B. Borgardt
Department of the Air Force, Washington, DC
Filed 27 Jun 85 15p
PAT-APPL-6-749 335 Available from NTIS: price code A02
The present invention utilizes a closed chamber or structure to enclose a small of amount of a solid propellant whose useful life is to be measured or sensed. The closed chamber forms a captive volume device in which there is included a detecting means. The useful life detecting means may comprise either colorimetric material which change color or a differential pressure device which changes its position in relationship to the useful life of the solid propellant material. A visual viewing port is provided in the captive volume device to allow the state of the detecting means to be observed.

0509 Carbon Granule Probe Microphone for Leak Detection
S. P. Parthasarathy
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 1 Jun 83, patented 12 Feb 85 5p
PATENT-4 498 333 Available from Comm. of Patents
A microphone which is not subject to corrosion is provided by employing carbon granules to sense sound waves. The granules are packed into a ceramic tube and no diaphragm is used. A pair of electrodes is located in the tube adjacent the carbon granules and are coupled to a sensing circuit. Sound waves cause pressure changes on the carbon granules which results in a change in resistance in the electrical path between the electrodes. This change in resistance is detected by the sensing circuit. The microphone is suitable for use as a leak detection probe in recovery boilers, where it provides reliable operation without corrosion problems associated with conventional microphones.

0510 Charge Depletion Meter
J. F. Schneider
Department of the Air Force, Washington, DC
Filed 27 Nov 84 13p
PAT-APPL-6-675 174 Available from NTIS: price code A02
This invention relates to a charge depletion meter apparatus having a cu rrent to frequency converter to sense and convert the current drain of a battery source to a digital signal which is divided and then accumulated in a counter. An LCD display unit displays the accumulated charge which is received from the counter.

0511 Chemical Sensor Matrix
A. Ballato
Department of the Army, Washington, DC
Filed 4 Sep 84 11p
PAT-APPL-6-646 536 Available from NTIS: price code A02
The general object of this invention is to provide a chemical sensor for sensing the presence of chemical agents. A further object of the invention is to provide such a chemical sensor that operates by chemo-electronic means. A still further object of the invention is to provide such a chemical sensor that will have a configuration adaptable for the detection of many chemical agents and that will be small in size, of light weight, and low in cost.

0512 Coaxial Probe for Measuring the Current Density Profile of Intense Electron Beams
R. Fiorito, M. Raleigh
Department of the Navy, Washington, DC
Filed 19 Jun 84 18p
PAT-APPL-6-640 178 Available from NTIS: price code A02
An interceptive type electric probe for mapping the radial current density profile of high energy and high current electron beams comprises, inter alia, an input sensor, an interface support connector and an output support connector. The entire structure of the electric probe is configured to closely approximate a coaxial transmission line of a predetermined impedance that is opened ended but yet shielded. The nature of the construction of the probe, in terms of materials and techniques, allows for survival thereof in high temperature and intense beam environments.

0513 Concentric Micro-Nebulizer for Direct Sample Insertion
V. A. Fassel, G. W. Rice, K. E. Lawrence
Department of Energy, Washington, DC
Filed 6 Mar 84 20p
PAT-APPL-6-586 611 Available from NTIS: price code A02
A concentric micro-nebulizer and method for introducing liquid samples into a plasma established in a plasma torch including a first tube connected to a source of plasma gas. The concentric micro-nebulizer has inner and outer concentric tubes extending upwardly within the torch for connection to a source of nebulizer gas and to a source of liquid solvent and to a source of sample liquid. The inner tube is connected to the source of liquid solvent and to the source of sample liquid and the outer tube is connected to the source of nebulizer gas. The outer tube has an orifice positioned slightly below the plasma when it is established, with the inner and outer tubes forming an annulus therebetween with the annular spacing between the tubes at said orifice being less than about 0.05mm. The dead volume of the inner tube is less than about 5 microliters.

0514 Continuous Laminar Smoke Generator
L. M. Weinstein
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 30 Aug 83, patented 15 Jan 85 7p
PATENT-4 493 211 Available from Comm. of Patents
A smoke generator capable of emitting a very thin, laminar stream of smoke for use in high detail flow visualization was invented. The generator is capable of emitting a larger but less stable rope of smoke. The invention consists of a pressure supply and fluid supply which supply smoke generating fluid to feed. The feed tube is directly heated by electrical resistance from current supplied by power supply and regulated by a constant temperature controller. A smoke exit hole is drilled in the wall of feed tube. Because feed tube is heated both before and past exit hole, no condensation of smoke generating occurs at the smoke exit hole, enabling the production of a very stable smoke filament. The generator is small in size which avoids wind turbulence in front of the test model.

0515 Correlation Spectrometer Having High Resolution and Multiplexing Capability
J. S. Margolis, J. V. Martonchik
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 30 Apr 82, patented 2 Oct 84 8p
PATENT-4 474 471 Available from Comm. of Patents
A correlation spectrometer permanently incorporates a reference cell and an electro-optical phase modulator (EOPM) in the light path between a sample cell and a detector. The effect of the EOPM is such that its frequency modulates all of the monochromatic component of the incoherent radiation passing through it. The EOPM is adjusted so that when it is ON all of the energy in the monochromatic components is thrown into sidebands differing from the original frequencies by integral multiples of the modulation frequency with the total amount of energy absorbed from the original radiation remaining constant. When there is no coincidence between the constituents in the two cells, the detector's output is the same when the EOPM is ON and when it is OFF. However, when there is coincidence the detector's output changes when the EOPM is switched between its two states. The change in the detector's output is related to the quantity of the constituents in the sample cell.

0516 Dermal Substance Collection Device
C. C. Peck
Department of the Army, Washington, DC
Filed 11 Feb 85 29p
PAT-APPL-6-660 778 Available from NTIS: price code A03
This patent application describes a dermal substance collection device (DSCD) which provides means for the noninvasive, instantaneous and continuous monitoring of chemical substances which are present in a detectable amount in either or both interstitial fluid or sweat or which are on or in the skin. The transdermal substance collection device of this invention is comprised of three essential components: (1) a substance binding reservoir, wettable by (2) a liquid transfer medium which allows for liquid bridge transfer of a soluble substance from the skin surface to the binding reservoir by virtue of its wettability by the liquid, and (3) an occlusive cover.

0517 Detonation Transfer Evaluation Technique
A. B. Zimmerschied
Department of the Air Force, Washington, DC
Filed 24 Feb 83, patented 16 Oct 84 4p
PATENT-4 476 710 Available from Comm. of Patents
In order to evaluate competing explosive trains at explosive interfaces, at least one penalty barrier is inserted in the gap between a donor explosive component and an acceptor explosive component. Each of the barriers, if more than one, has a first layer and a second layer. The first layer is selected to have a shock impedance greater than the second layer so that a shock pulse is attenuated to a desired degree. Additional barriers can be added to increase the attenuation. A use of this device allows the shock intenties to be varied without varying wave shape or duration and further allows use of established shock equations of states of materials.

0518 Device and Method for Measuring the Energy Content of Hot and Humid Air Streams
H. N. Rosen, A. C. Kent, G. F. Girod
Department of Agriculture, Washington, DC
Filed 30 May 84 14p
PAT-APPL-6-662 378 Available from NTIS: price code A02
Many industrial processes involve the flow of humid air to or from the pieces of equipment. Generally, such processes are involved in removal of water from a product (drying) or the re-entry of water to improve the physical properties of the product (conditioning). Considerable energy is transferred in the humid air streams of these processes. This invention relates to a portable device and method of measuring enthalpy or heat content of humid air streams.

0519 Device for Simulating Stress on Packages during Coupling of Railcars
M. Turczyn
Department of Agriculture, Washington, DC
Filed 15 Jun 84 13p*
PAT-APPL-6-620 815 Available from NTIS: price code A02
This invention relates to devices for simulating railcar shock during coupling of freight cars in order to study the effect of such stress on differe nt kinds of packages in the cars.

0520 Diamond-Anvil High-Pressure Cell with Improved X-Ray Collimation System
D. Schiferl, B. W. Olinger, R. W. Livingston
Department of Energy, Washington, DC
Filed 30 Mar 84 18p
PAT-APPL-6-595 013 Available from NTIS: price code A02
An adjustable x-ray collimation system for a diamond-anvil high-pressure cell of the type including a cooperable piston and cylinder and a pair of opposing diamonds located between the head of the piston and the head of the cylinder. The x-ray collimation system includes a tubular insert which contains an x-ray collimator. The insert is engageable in the bore of the piston. The collimator is mounted within the insert by means of an elastomeric o-ring at the end closest the opposed diamonds, and by means of a set of adjustable set screws at the opposite end. By adjustment of the set screws the collimator can be pivoted about the o-ring and brought into alignment with the opposed diamonds and the sample contained therein. In the preferred embodiment there is further provided a set of plugs which are insertable in the bore of the collimator. The plugs have bores of different diameters. By successively inserting plugs of progressively smaller bore diameters and adjusting the alignment of the collimator with each plug, the collimator can be quickly brought into accurate alignment with the diamonds. The collimation system allows alignment of the collimator either before or after the cell has been loaded and pressurized.

0521 Disc Valve for Sampling Erosive Process Streams
J. E. Mrochek, S. R. Dinsmore, E. W. Chandler
Department of Energy, Washington, DC
Filed 16 Aug 84 9p
PAT-APPL-6-641 223 Available from NTIS: price code A02
This is a patent for a disc-type, four-port sampling valve for service with erosive high temperature process streams. Inserts and liners of alpha -silicon carbide respectively, in the faceplates and in the sampling cavities, limit erosion while providing lubricity for a smooth and precise operation. 1 fig.

0522 Double Window Viewing Chamber Assembly
V. W. Keller, R. B. Queen, B. R. Elkin, W. L. White
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 2 May 85 12p
PAT-APPL-6-729 766 Available from NTIS: price code A02
A viewing chamber which permits observation of a sample retained therein includes a pair of double window assemblies mounted in opposed openings in the walls thereof so that a light beam can directly enter and exit from the chamber. A flexible mounting arrangement for the outer windows of the window assemblies enables the windows to be brought into proper alignment. An electrical heating arrangement prevents fogging of the outer windows whereas desiccated air in the volume between the outer and inner windows prevents fogging of the latter.

0523 Drying of Pulverized Material with Heated Condensible Vapor
L. W. Carlson
Department of Energy, Washington, DC
Filed 16 Aug 84 21p
PAT-APPL-6-641 222 Available from NTIS: price code A02
Apparatus for drying pulverized material utilizes a high enthalpy condensable vapor such as steam for removing moisture from the individual particles of the pulverized material. The initially wet particulate material is tangentially delivered by a carrier vapor flow to an upper portion of a generally vertical cylindrical separation drum. The lateral wall of the separation drum is provided with a plurality of flow guides for directing the vapor tangentially therein in the direction of particulate material flow. Positioned concentrically within the separation drum and along the longitudinal axis thereof is a water-cooled condensation cylinder which is provided with a plurality of collection plates, or fines, on the outer lateral surface thereof. The cooled collection fines are aligned counter to the flow of the pulverized material and high enthalpy vapor mixture to maximize water vapor condensation thereon. The condensed liquid which includes moisture removed from the pulverized materials then flows downward along the outer surface of the coolant cylinder and is collected and removed. The particles travel in a shallow helix due to respective centrifugal and vertical acceleration forces applied thereto. The individual particles of the pulverized material are directed outwardly by the vortex flow where they contact the inner cylindrical surface of the separation drum and are then deposited at the bottom

thereof for easy collection and removal. The pulverized material drying apparatus is particularly adapted for drying coal fines and facilitates the recovery of the pulverized coal. 2 figs.

0524 Dual Beam Translator for Use in Laser Doppler Anemometry
D. M. Brudnoy
Department of Energy, Washington, DC
Filed 12 Apr 84 25p
PAT-APPL-6-599 291 Available from NTIS: price code A02
A method and apparatus for selectively translating the path of at least one pair of light beams in a Laser Doppler anemometry device whereby the light paths are translated in a direction parallel to the original beam paths so as to enable attainment of spacial coincidence of the two intersection volumes and permit accurate measurements of Reynolds shear stress.

0525 Dual Differential Interferometer
R. O. Claus, T. M. Turner
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 2 Sep 82, patented 23 Apr 85 6p
PATENT-4 512 661 Available from Comm. of Patents
A dual two-beam differential interferometer that measures both the amplitude and orientation of propagating, broadband surface acoustic waves is disclosed. Four beams are focused on a surface. The four reflected beams are separated into two pairs. The two pairs are detected to produce two signals that are used to compute amplitude and orientation.

0526 Dynamic Polymer Pressure Transducer with Temperature Compensation
A. J. Bur
Department of the Air Force, Washington, DC
Filed 6 Sep 84 16p
PAT-APPL-6-647 782 Available from NTIS: price code A02
Accurate dynamic pressure data in a changing thermal environment is obtained through the use of a pressure gage formed from polyvinylidene fluoride (PVDF) polymer material. The temperature compensation pressure gage has three major elements: an active PVDF transducer which obtains remote pressure readings which are uncorrected for thermal effects; a thermocouple having a short rise time allowing an output thermal signal which dynamically responds to changing thermal conditions; and a compensation amplifier circuit receiving the uncorrected pressure readings and the dynamic thermal signal and producing an output signal representing accurate pressure data which is corrected for changing thermal conditions. Also disclosed are the details of making an active PVDF transducer.

0527 Dynamic Pressure Test Unit-Ratio Method
P. R. Tkachuk
Department of the Navy, Washington, DC
Filed 2 Feb 84 14p
PAT-APPL-6-576 229 Available from NTIS: price code A02
A dynamic pressure test unit is utilized to determine the yield point of a flask. For a period of time prior to the yield point being reached the ratio of the pressure vs. volume of water pumped into a test flask assumes a constant value. After reaching the yield point the volume indication increases at a faster rate than the pressure giving negative slope to a line on a stripchart recorder that indicates the pressure divided by the volume of water pumped into the flask.

0528 Echometry Device and Method
E. H. Brown
Department of Commerce, Washington, DC
Filed 7 May 81, patented 6 Nov 84 15p
PATENT-4 481 517 Available from Comm. of Patents
Devices and methods are disclosed for remote measurment of temperature (and velocity) profiles in a fluid medium (i.e., the atmosphere and/or oceans). Each device, herein called an echometer, and method are capable of providing remote measurements of temperature through the use of propagated waves (i.e., acoustic or electromagnetic waves) and interferometric principles. By use of Doppler processing, simultaneous measurement can be made of three-dimensional velocities at the same points in space to enable remote measurement of heat fluxes in the atmosphere or ocean. The waves to be propagated are formed and then transmitted from a transmitting array to form a pattern of constructive interference fringes and reflected (or scattered) waves are received from predetermined points in the constructive interference fringes at a receiver where an analog signal indicative of the reflected waves is formed and the mean phase thereof sampled to form a digital signal that is processed to determine therefrom temperature changes or absolute temperature measurements at predetermined points spaced from the transmitting array and receiver.

0529 Eddy Current Test Probe with Circumferential Segments and Method of Testing Material Surrounding Fastener Holes
K. M. Lakin
Department of the Air Force, Washington, DC
Filed 8 Apr 82, patented 22 Jan 85 8p
PATENT-4 495 466 Available from Comm. of Patents
This patent discloses an instrument having a multi-segmented cup core of a high permeability material with a center post. The outer wall of the cup contains equidistant holes and slots through which a plurality of individual windings are constructed to form a circulary array of pick-up coils. A primary winding or search coil is constructed around the center post. Excitation of the search coil induces eddy currents in adjacent multi-layered bolt hole regions which in turn produce a voltage in each of the pick-up coils. As a crack in the material under test will cause an abnormal distribution of eddy currents, a comparison of the voltage measurements of the specimen under test with those of a reference sample will detect the presence of a crack and its corresponding orientation.

0530 Electrochemical Methane Sensor
S. Zaromb, T. Otagawa, J. R. Stetter
Department of Energy, Washington, DC
Filed 27 Aug 84 26p
PAT-APPL-6-644 467 Available from NTIS: price code A03
A method and instrument including an electrochemical cell for the detection and measurement of methane in a gas by the oxidation of methane electrochemica lly at a working electrode in a nonaqueous electrolyte at a voltage about 1.4 volts vs R.H.E. (the reversible hydrogen electrode potential in the same electrolyte), and the measurement of the electrical signal resulting from the electrochemical oxidation.

0531 Electrolytic Cell
J. S. Bullock, B. D. Hale
Department of Energy, Washington, DC
Filed 14 Sep 84 14p
PAT-APPL-6-652 690 Available from NTIS: price code A02
An apparatus is described for the separation of the anolyte and the catholyte during electrolysis. The electrolyte flows through an electrolytic cell between the oppositely charged electrodes. The cell is equipped with a wedge-shaped device, the tapered end being located between the electrodes on the effluent side of the cell. The wedge diverts the flow of the electrolyte to either side of the wedge, substantially separating the anolyte and the catholyte.

0532 Electronic Temperature Equalizer
E. D. Bitner, E. B. Lancaster
Department of Agriculture, Washington, DC
Filed 29 Jan 85 13p
PAT-APPL-6-696 274 Available from NTIS: price code A02
An electronic circuit has been devised for precisely controlling the temperature of one zone in response to a change in temperature in another zone. Two sensors, one in each zone, are wired in opposing polarity so as to emit a signal when a temperature imbalance occurs. The circuit is designed to actuate a temperature controller in response to the signal. One application for the device is the establishment of adiabatic conditions for a reaction by controlling the temperature of the zone surrounding the reaction vessel to coincide with that within the vessel.

0533 Emitted Vibration Measurement Device and Method
G. L. Gisler
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 3 Oct 84 17p
PAT-APPL-6-657 310 Available from NTIS: price code A02
This invention is directed to a method and apparatus for measuring emitted vibrational forces produced by a reaction wheel assembly due to imbalances, misalignment, bearing defects and the like. The apparatus includes a low mass carriage supported on a large mass base. The carriage is in the form of an octangonal frame having an opening which is adapted for receiving the reaction wheel assembly supported thereon by means of a mounting ring. The carriage is supported on the base by means of air bearings which support the carriage in a generally frictionless manner when supplied with compressed air from source. A plurality of carriage brackets and a plurality of base blocks provide for physical coupling of the base and carriage. The sensing axes of the load cells are arranged generally parallel to the base and connected between the base and carriage.

0534 External Cavity Diode Laser Sensor
R. O. Miles, T. G. Giallorenzi, A. B. Tveten
Department of the Navy, Washington, DC
Filed 22 Jul 81, patented 5 Jun 84 8p
PATENT-4 452 533 Available from Comm. of Patents
This document describes a sensor for sensing conditions such as acoustic waves, temperature changes, acceleration current and magnetic fields. The sensor employs a diode laser having its cavity contained between end facets defined by partially reflective mirrors, supplemented by an external cavity formed between one of the end facets of the laser and a translatable external reflector. The reflector is position-responsiveness to a condition to be sensed. A change in the reflector's positions causes laser output light to be fed back through the mirror into the laser cavity with varying phase such that an increase or decrease in laser emission is created. A change of detector voltage or change in laser current provides an indication of environmental condition being sensed.

0535 Fall Velocity Indicator/Viewer
R. O. Berthel, V. G. Plank, S. H. Jones, A. J. Matthews
Department of the Air Force, Washington, DC
Filed 18 Nov 82, patented 30 Apr 85 8p
PATENT-4 514 758 Available from Comm. of Patents
A fall velocity indicator/viewer having a sampling compartment, a camera system, and an elongated tunnel for interconnecting the camera system to the sampling compartment. The camera system includes a video camera for continuously monitoring snowflakes as they naturally fall through a viewing area in the sampling compartment. The snowflakes are illuminated by a pair of strobe lights directly and in combination with reflected light from a pair of mirrors. In addition, a mirror in the tunnel provides a reflected view from the top of the snowflakes. The video camera is capable of thereby monitoring multiple views of snowflakes in a single video frame and provide sufficient data to analyze the physical characteristics of the snowflakes as well as aid in making velocity determinations and other observations of naturally falling snowflakes.

0536 Fast Granular Superconducting Bolometer
S. A. Wolf, U. Strom, K. Weiser
Department of the Navy, Washington, DC
Filed 9 Aug 82, patented 7 Aug 84 7p
PATENT-4 464 065 Available from Comm. of Patents
This abstract discloses a granular superconducting thin film bolometer made by anodizing a thin film of such materials as niobium nitride to form a thin granular film separated by and covered with the anodized oxide. The bolometer is cooled to its superconducting state and electrically connected to a biasing and detecting network. Its temporal response is better than 1 ns.

0537 Fault Finder
R. H. Bunch
Department of Energy, Washington, DC
Filed 27 Jan 84 35p
PAT-APPL-6-574 510 Available from NTIS: price code A03
The present invention relates generally to automated circuitry for detecting and locating faults in electrical transmission lines. It comprises electronic circuits at both a master unit and a remote unit linked to one another through conventional communication facilities. This disclosure relates to a unique system for synchronizing operation of a remote and master unit, and for facilitating transfer of information between them through a conventional communication line. It eliminates the need for more expensive specialized communication facilities required by systems that preceded it.

0538 Ferromagnetic Resonance Probe Liftoff Suppression Apparatus
T. J. Davis, P. L. Tomeraasen
Department of the Air Force, Washington, DC
Filed 23 Nov 82, patented 9 Jul 85 5p
PATENT-4 528 506 Available from Comm. of Patents
A liftoff suppression apparatus utilizing a liftoff sensing coil to sense the amount a ferromagnetic resonance probe lifts off the test surface during flaw detection and utilizing the

liftoff signal to modulate the probe's field modulating coil to suppress the liftoff effects.

0539 FET Charge Sensor and Voltage Probe
P. A. Robinson
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 16 Aug 84 14p
PAT-APPL-6-641 146 Available from NTIS: price code A02
A simple, light, power-efficient solid state charge sensor usable for a variety of purposes in a variety of space environments is provided. This sensor comprises a mosfet structure provided with a biased gate formed under an insulator several times thicker than a typical mosfet passivating layer. Several such sensors having different gate materials and/or insulator thicknesses may be stacked to provide a particle spectrometer.

0540 Fiber Optic Moisture Sensor
R. R. Kirkham
Department of Energy, Washington, DC
Filed 3 Aug 84 10p
PAT-APPL-6-637 627 Available from NTIS: price code A02
A method and apparatus for sensing moisture changes by utilizing optical fiber technology. One embodiment uses a reflective target at the end of an optical fiber. The reflectance of the target varies with its moisture content and can be detected by a remote unit at the opposite end of the fiber. A second embodiment utilizes changes in light loss along the fiber length. This can be attributed to changes in reflectance of cladding material as a function of its moisture content. It can also be affected by holes or inserts interposed in the cladding material and/or fiber. Changing light levels can also be coupled from one fiber to another in an assembly of fibers as a function of varying moisture content in their overlapping lengths of cladding material.

0541 Fiber Optic Sensors Operating at DC
S. C. Rashleigh
Department of the Navy, Washington, DC
Filed 27 Oct 82, patented 22 Jan 85 18p
PATENT-4 495 411 Available from Comm. of Patents
Document describes a fiber optic sensor for detecting and/or measuring a physical quantity varying at any frequency from a maximum desired frequency down to zero frequency with minimum disturbance from environmentally induced perturbations. A first highly birefringent optical fiber is positioned longitudinally adjacent to a second equally birefringent fiber. Each fiber has orthogonally disposed fast and slow axes. The fibers are oriented such that their fast axes are perpendicular to each other. When subjected to stress caused by a physical quantity acting on the fibers through a transducer, the birefringence of each of the two fibers is asymmetrical altered thereby rotating the states of polarization of coherent light signals passing through the two fibers in a common direction. Environmental perturbations symmetrically alter the birefringence of each of the fibers thereby rotating that states of polarization of the light signals in opposite directions. The states of polarization of the light signals emanating from the two fibers are detected and combined such that the changes due to the physical quantity enhance each other while the changes due to environmental perturbations are cancelled.

0542 Fiber Optic System for Measuring Electric Fields
L. C. Bobb
Department of the Navy, Washington, DC
Filed 18 Nov 82, patented 18 Jun 85 5p
PATENT-4 524 322 Available from Comm. of Patents
A fiber optic sensor system and associated technique is disclosed for measuring an electric field wherein a sensor arm of optical fiber cable is wound about a core member of piezoelectric material. A reference arm of optical fiber cable substantially equal in optical path length to the sensor arm is isolated and connected in parallel to the sensor arm so that coherent light generated by a single model laser source may be split through the fiber-optic arms and recombined after passage there-through for phase comparison. When subjected to a local electric field, the core member of piezoelectric material varies in dimensions and thereby causes a change in the stain in the optical fiber cable of the sensor arm. Relative phase changes in the coherent light caused by the resulting optical path length change of the strained homodyne demodulator and deterministive of the value of the local electric field. A vane-type shield is adapted to be rotated about the core member for periodically reducing the local electric field to near zero thereby providing a reference level for field measurement.

0543 Fiber Optics as an Angular Sensor
H. Rieger
Department of the Navy, Washington, DC
Filed 27 Jun 85 12p
PAT-APPL-6-749 340 Available from NTIS: price code A02
This patent application discloses an uncomplicated, compact and environmentally-immune sensor for the degree of articulation of finger joints in a remote underwater vehicle which uses a length of an optical fiber connected to each finger joint. As the joint is rotated, the bending of the optical fiber changes the attenuation of light through the fibers and a detector monitoring this change provides a signal that is correlated to the degree of articulation.

0544 Flow Measurement Device
T. C. Chandler
Department of the Air Force, Washington, DC
Filed 17 Oct 84 18p
PAT-APPL-6-661 834 Available from NTIS: price code A02
A device is described for measuring fuel flow to a power plant such as a turbo fan engine with a very high degree of accuracy, for example, / or - 0.5%. A tubular flow loop having quick disconnect fittings for detachably connecting the loop between the aircraft fuel system outlet and the engine fuel inlet is disclosed. Two specially calibrated mass flow transmitters are arranged in series, each preceded by a straight section of piping having a preferred given length to diameter ratio. Preceding each of the two straight pipe sections is a honeycomb flow straightener and three in-series perforated plates for removing any effects of upstream flow characteristics from the transmitters.

0545 Fluidic Angular Velocity Sensor
C. M. Berdahl
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 4 Apr 85 19p
PAT-APPL-6-719 794 Available from NTIS: price code A02
A fluidic sensor providing a differential pressure signal proportional to the angular velocity of a rotary input is de-

scribed. In one embodiment the sensor includes a fluid pump having an impeller coupled to a rotary input. A housing forming a constricting fluid flow chamber is connected to the fluid input of the pump. The differential pressure signal measured across the flow restrictive input is relatively noise free and proportional to the square of the angular velocity of the impeller. In an alternative embodiment, the flow chamber has a generally cylindrical configuration and plates having flow restrictive apertures are disposed within the chamber downstream from the housing port. In this embodiment, the differential pressure signal is found to be approximately linear with the angular velocity of the impeller.

0546 Fly's Eye Sensor Nonlinear Signal Processing
R. T. Schneider
Department of the Air Force, Washington, DC
Filed 13 Jun 84 34p
PAT-APPL-6-620 211 Available from NTIS: price code A03
Document describes a multiaperture fly's eye optical signal transducing apparatus employing nonlinear electrical signal processing located adjacent the optical transducers in a multifunction integrated circuit device. The processed signals have enhanced low-level contrast and attenuated high contrast. Utilization examples, mathematical equations and related characteristic curves are also included along with exemplary circuit diagrams.

0547 Gap and Stripline Combined Monitor
Y. Yin
Department of Energy, Washington, DC
Filed 16 Feb 84 16p
PAT-APPL-6-580 981 Available from NTIS: price code A02
A combined gap and stripline monitor device for measuring the intensity and position of a charged particle beam bunch in a beam pipe of a synchrotron radiation facility. The monitor has first and second beam pipe portions with an axial gap therebetween. An outer pipe cooperates with the first beam pipe portion to form a gap enclosure, while inner strips cooperate with the first beam pipe portion to form a stripline monitor, with the stripline length being the same as the gap enclosure length.

0548 Gas Contamination Detection Device
E. S. Kolesar
Department of the Air Force, Washington, DC
Filed 27 Jan 82, patented 18 Sep 84 7p
PATENT-4 472 356 Available from Comm. of Patents
A device is described for detecting the degree of contaminating of a gas filter system by a contaminating gas. The device comprises a filter chamber having a pair of rids positioned therewithin and coated with a semiconductive polymer whole bulk conductivity changes due to a chemical reaction between the polymer and a contaminating gas. Measurement of the change is then utilized to indicate the degree of contamination in the filter system.

0549 Heat Pipe Cooled Probe
C. J. Camarda, L. M. Couch
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 13 Feb 81, patented 4 Dec 84 6p
PATENT-4 485 670 Available from Comm. of Patents
The basic heat pipe principle is employed to provide a self-contained passively cooled probe that may be placed into a high temperature environment. The probe consists of an evaporator region of a heat pipe and a sensing instrument. Heat is absorbed as the working fluid evaporates in the probe. The vapor is transported to the vapor space of the condenser region. Heat is dissipated from the condenser region and fins causing condensation of the working fluid, which returns to the probe by gravity and the capillary action of the wick. Working fluid, wick and condenser configurations and structure materials can be selected to maintain the probe within an acceptable temperature range.

0550 Heat Pipe Oven Molecular Beam Source
R. E. Drullinger
Department of Commerce, Washington, DC
Filed 1 Aug 84 16p
PAT-APPL-6-636 769 Available from NTIS: price code A02
A heat pipe oven molecular beam source wherein a hollow porous metal, metalloid or ceramic body with at least one opening is nearly saturated with the working material and heated to just above the melting point of the working material, generating a thin liquid layer of the working material on the internal surface of the body. Material passing the length of the bore of the body without striking a wall will escape and form the beam. Material striking the liquid layer covering the inside of the body will condense and be conveyed by capillary action back to the closed end of the body.

0551 Heater Block Assembly for Use in Thermal Oxidation Testing of Jet Fuel
R. A. Harvey
Department of the Air Force, Washington, DC
Filed 19 Sep 84 12p
PAT-APPL-6-651 983 Available from NTIS: price code A02
A heater block assembly for a jet fuel thermal oxidation test apparatus has back and front plates with a heater plate clamped therebetween. The heater plate has a flat surface which faces the front plate, while the front plate has a raised ledge with a channel formed therein which faces the flat surface of the heater plate. Also, inlet and outlet openings to opposite ends of the channel are formed through the front plate. When the back and front plates are clamped together with the heater plate therebetween the flat surface of the heater plate and the channel in the front plate together define a fuel sample flow passage. Thus, the fuel sample undergoing test is pumped through the inlet on the front plate into the flow passage where it flows along and in contact with the flat surface and then out through the outlet on the front plate. Heating rods disposed in the back plate raise the temperature of the back plate and thereby the heater plate and fuel sample, causing thermal decomposition deposits from the heated fuel to form on the flat surface of the heater plate.

0552 High Pressure Liquid Level Monitor
V. E. Bean, F. G. Long
Department of Energy, Washington, DC.**National Bureau of Standards, Gaithersburg, MD
Filed 28 Apr 82, patented 8 May 84 12p
PATENT-4 447 743 Available from Comm. of Patents
A liquid level monitor for tracking the level of a coal slurry in a high-pressure vessel including a toroidal-shaped float with magnetically permeable bands thereon disposed within the vessel, two pairs of magnetic field generators and detectors disposed outside the vessel adjacent the top and bottom thereof and magnetically coupled to the magnetically permeable bands on the float, and signal processing circuitry for combining signals from the top and bottom detectors for generating a monotonically increasing analog control signal which is a function of liquid level. The control

signal may be utilized to operate high-pressure control valves associated with processes in which the high-pressure vessel is used.

0553 High Resolution In situ Ultrasonic Corrosion Monitor
R. J. Grossman
Department of Energy, Washington, DC
Filed 10 Jan 84 19p
PAT-APPL-6-569 700 Available from NTIS: price code A02
An ultrasonic corrosion monitor is provided which produces an in situ measurement of the amount of corrosion of a monitoring zone or zones of an elongate probe placed in the corrosive environment. A monitoring zone is preferably formed between the end of the probe and the junction of the zone with a lead-in portion of the probe. Ultrasonic pulses are applied to the probe and a determination made of the time interval between pulses reflected from the end of the probe and the junction referred to, both when the probe is uncorroded and while it is corroding. Corresponding electrical signals are produced and a value for the normalized transit time delay derived from these time interval measurements is used to calculate the amount of corrosion.

0554 Hollow Cathode Apparatus
G. Aston
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 22 Jun 81, patented 2 Oct 84 6p
PATENT-4 475 063 Available from Comm. of Patents
A hollow cathode apparatus is described, which can be rapidly and reliably started. An ignitor positioned upstream from the hollow cathode, generates a puff of plasma that flows with the primary gas to be ionized through the cathode. The plasma puff creates a high voltage breakdown between the downstream end of the cathode and a keeper electrode, to heat the cathode to an electron-emitting temperature.

0555 Humidity Sensing and Measurement Employing Halogenated Organic Polymer Membranes
P. H. Huang
Department of Commerce, Washington, DC
Filed 5 Aug 85 26p
PAT-APPL-6-762 740 Available from NTIS: price code A03
Thin films of hygroscopic, halogenated organic polymer having pendant groups of a relatively strong acidic type (e.g., sulfonic groups) and pendant groups of a relatively weak acidic type (e.g., carboxylic groups) are employed for humidity sensing by electronic, acoustics, and optical techniques.

0556 Imaging X-Ray Spectrometer
P. A. Grant, J. W. Jackson, G. E. Alcorn, F. E. Marshall
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 19 Feb 82, patented 18 Sep 84 6p
PATENT-4 472 728 Available from Comm. of Patents
An X-ray spectrometer for providing imaging and energy resolution of an X-ray source is described. This spectrometer is comprised of a thick silicon wafer having an embedded matrix or grid of aluminum completely through the wafer fabricated, for example, by thermal migration. The aluminum matrix defines the walls of a rectangular array of silicon X-ray detector cells or pixels. A thermally diffused aluminum electrode is also formed centrally through each of the silicon cells with biasing means being connected to the aluminum cell walls and causes lateral charge carrier depletion between the cell walls so that incident X-ray energy causes a photoelectric reaction within the silicon producing collectible charge carriers in the form of electrons which are collected and used for imaging.

0557 Impacting Device for Testing Insulation
J. W. Redmon
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 24 Jan 83, patented 11 Sep 84 10p
PATENT-4 470 293 Available from Comm. of Patents
An electro-mechanical impacting device for testing the bonding of foam insulation to metal is described. The device lightly impacts foam insulation attached to metal to determine whether the insulation is properly bonded to the metal and to determine the quality of the bond. A force measuring device, preferably a load cell mounted on the impacting device, measures the force of the impact and the duration of the time the hammer head is actually in contact with the insulation. The impactor is designed in the form of a handgun having a driving spring which can propel a plunger forward to cause a hammer head to impact the insulation. The device utilizes a trigger mechanism which provides precise adjustements, allowing fireproof operation.

0558 Improved Chemical Sensor Matrix
A. Ballato
Department of the Army, Washington, DC
Filed 7 Aug 85 15p
PAT-APPL-6-763 160 Available from NTIS: price code A02
An improved chemical sensor matrix is provided for sensing the presence of chemical agents by chemo-electronic means. The chemical sensor matrix is comprised of a plurality of resonators embedded in a single monolithic piece of piexoelectric crystal. The resonators are arranged in rectangular row and column configuration including m rows and n columns, each of the resonators being separated from its neighboring resonators by distances such that the resonant energies do not overlap. Each of the resonators is provided with etch tunnels that are coated within by a chemical substance particular to that resonator and different from the chemical substance used to coat any other resonator, the chemical substance being sensitive to a chemical agent to be detected so that when the chemical agent reacts with the chemical substance the frequency f subscript mn changes. Each of the rows of resonators bears a metallic electrode stripe for that row, and each of said columns of resonators bears a metallic electrode stripe for that column. Two diode arrays are positioned on the periphery of the crystal for addressing the individual row electrode stripes and the individual column electrode stripes so that the desired resonator can be activated by connecting the stripe corresponding to its row address and the stripe corresponding to its column address to suitable active oscillator circuitry and signal processing means. The resonators f subscript mn can then be interrogated sequentially and frequency change registered.

0559 Improved Flow Cytometer Measurement of Binding Assays
G. C. Saunders
Department of Energy, Washington, DC
Filed 30 May 84 21p
PAT-APPL-6-615 486 Available from NTIS: price code A02

The invention relates to a method of measuring binding assays carried out with different size particles wherein the binding assay sample is run through a flow cytometer without separating the sample from the marking agent. The amount of a binding reactant present in a sample is determined by providing particles with a coating of binder and also a known quantity of smaller particles with a coating of binder reactant. The binding reactant is the same as the binding reactant present in the sample. The smaller particles also contain a fluorescent chemical. The particles are combined with the sample and the binding reaction is allowed to occur for a set length of time followed by combining the smaller particles with the mixture of the particles and the sample produced and allowing the binding reactions to proceed to equilibrium. The fluorescence and light scatter of the combined mixture is then measured as the combined mixture passes through a flow cytometer equipped with a laser to bring about fluorescence, and the number and strength of fluorescent events are compared. A similar method is also provided for determining the amount of antigen present in the sample by providing spheres with an antibody coating and some smaller spheres with an antigen coating.

0560 Improved Fluid Flow Meter for Measuring the Rate of Fluid Flow in a Conduit

P. R. White
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 4 Apr 85 16p
PAT-APPL-6-719 799 Available from NTIS: price code A02

A fluid flow rate meter is described. A tube fluid flow rate meter is comprised of a reservoir divided by flexible diaphragms into two separate, isolated compartments except for an orifice in the diaphragm. An incoming tube opens into a compartment and an outgoing tube opens into a compartment. An orifice is sized to allow maximum tube fluid flow. Opposing compression springs are secured within the two compartments with a bias diaphragm on opposite sides of orifice to maintain the orifice in a given position when the tube fluid pressure is zero. A tapered element is centered in, and extends through the orifice into the compartment leaving an annular opening between the element and the perimeter of orifice whose size varies as the diaphragm flexes with changes in tube fluid pressure to change the fluid flow through the opening. A light source directs light upon an element which scatters the light through the opening into the compartment. The light detector in the compartment senses the scattered light and generates a signal indicating the amount of fluid flow.

0561 Improved Method and Apparatus for the Mass Rearing of Fruit Flies

R. I. Vargas, H. E. Mabry
Department of Agriculture, Washington, DC
Filed 29 Jan 85 16p
PAT-APPL-6-696 222 Available from NTIS: price code A02

The authors have discovered an improved method and apparatus for collection of eggs for large scale production of fruit flies. Due to novel features of the authors invention, fruit flies are stimulated to lay 44% greater numbers of eggs over the screen method and 14% greater numbers of eggs over the bottle method, even when the parameters of hole size, spacing and number of holes have been optimized over the conventional bottle method as described in detail below. At a required mass production level of one billion eggs per week, 44% and 14% translates into 440 and 140 million eggs, respectively. Loss of quality and viability of eggs, which was 26% less with the screen method, is minimized and labor to collect the eggs is reduced 70% from the bottle method.

0562 Improved Temperature Detection System for Use on Film Cooled Turbine Airfoils

R. Frederick
Department of the Air Force, Washington, DC
Filed 1 May 85 13p
PAT-APPL-6-729 388 Available from NTIS: price code A02

This patent application discloses and improved temperature detection system for use on film cooled turbine airfoils having a showerhead assembly with a series of parallel slots defined in the leading edge of an airfoil, each slot having a multiplicity of film flow ports exiting therefrom. A plurality of sensor assemblies are affixed to the airfoil showerhead and are couplable via electrodes to electronic sensing equipment for establishing the gas flow temperature.

0563 Instantaneous Frequency Measurement Receiver with Digital Processing

J. B. Y. Tsui
Department of the Air Force, Washington, DC
Filed 30 May 85 13p
PAT-APPL-6-739 413 Available from NTIS: price code A02

The receiver comprises a 90 deg hybrid and analog-to-digital converters between the RF section and digital processing: which makes it possible to eliminate a phase correlator, four diode detectors and two differential amplifiers used in previous IFM (Instantaneous Frequency Measurement) receivers to obtan the sine and cosine signal samples at an initial time and at a delayed time. (Patent applications)

0564 Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse

L. C. Yang
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 30 Nov 81, patented 6 Aug 85 8p
PATENT-4 532 797 Available from Comm. of Patents

Instrumentation for sensing moisture content of material using a transient thermal pulse is comprised of a sensing probe having a sensing element in the form of a ribbon excited by a constant current pulse from a source to increase the temperature and therefore the resistance of the ribbon linearly. Moisture in web material will limit the increase of temperature during the pulse in proportion to the moisture content. This increase in temperature produces a proportional increase in resistivity which is measured with a wheatstone bridge as a change in voltage displayed by a measurement display unit. The probe is glued in a shallow groove of a Lucite bar and connected to copper pins embedded in the bar.

0565 Insulation Bonding Test System

J. M. Beggs, G. D. Johnston, A. D. Coleman, J. N. Portwood, J. M. Saunders
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 10 Feb 83, patented 30 Oct 84 9p
PATENT-4 479 386 Available from Comm. of Patents

A method and a system for testing the bonding of foam insulation attached to metal is described. The system involves the use of an impacter which has a calibrated load cell mounted on a plunger and a hammer head mounted on the end of the plunger. When the impacter strikes the insulation at a point to be tested, the load cell measures the force of the impact and the precise time interval during which the hammer head is in contact with the insulation. This information is transmitted as an electrical signal to a load cell amplifier where the signal is conditioned and then transmitted to a fast Fourier transform (FFT) analyzer. The FFT analyzer produces energy spectral density curves which are displayed on a video screen. The termination frequency of the energy spectral density curve may be compared with a predetermined empirical scale to determine whether a igh quality bond, good bond, or debond is present at the point of impact.

Interface Alignment System
See 1048

0566 Laser Clock
R. L. Facklam
Department of the Air Force, Washington, DC
Filed 26 May 83, patented 13 Nov 84 6p
PATENT-4 482 259 Available from Comm. of Patents
A laser clock includes a linear laser in one embodiment of the clock and a ring laser gyro in the other embodiment. The linear laser is frequency stabilized and utilizes a single active medium in the form of a low pressure gas, such as He-Ne, with a Doppler broadened gain curve. The ring laser gyro is a four frequency laser with a Faraday rotor. Detector and electronic circuitry associated with the laser of each embodiment detect a beat frequency and coverts it to a clock signal.

0567 Laser Generation of Ultrasonic Waveform Reconstructions
W. R. Scott, C. S. Ih
Department of the Navy, Washington, DC
Filed 19 Jan 83, patented 18 Jun 85 5p
PATENT-4 523 469 Available from Comm. of Patents
In this patent a series of pulses are transmitted to a first laser and the same series of pulses through a time delay network to a second laser. Each laser provides pulses of light through separate diagonal mirrors and through respective transparent holograms. Each light is then brought into convergence by respective sides of a wedge shaped reflector and brought into spatially coincident focus by an imaging lens onto the surface of a sample under test. The two hologram transparencies are imaged spacially coincident but separated in time on the face of the sample. Thermal elastic waves produced by laser heating at the sample surface transform into a desired acoustic beam pattern determined by the nature of the wavefronts which the hologram transparency represents. The position of the coincident image on the sample may be moved by varying the time between the two pulses.

0568 Laser Schlieren Crystal Monitor
M. H. Johnston, R. B. Owen
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 28 Feb 85 12p
PAT-APPL-6-706 565 Available from NTIS: price code A02
A system and method for monitoring the state of a crystal which is suspended in a solution, is described, which includes providing a light source for emitting a beam of light along an optical axis. A collimating lens is arranged along the optical axis for collimating the emitted beam to provide a first collimated light beam consisting of parallel light rays. By passing the first collimated light beam through a transparent container, a number of the parallel light rays are deflected off of the surfaces of said crystal being monitored according to the refractive index gradient to provide a deflected beam of deflected light rays. A focusing lens is arranged along the optical axis for focusing the deflected rays towards a desired focal point. A band is created at one edge of the image of the crystal which indicates the state of change of the surface of the crystal being monitored.

0569 Laser Vibrometer
M. J. Rudd
Department of the Navy, Washington, DC
Filed 31 Aug 84 17p
PAT-APPL-6-645 888 Available from NTIS: price code A02
This Abstract disclosures an optical interferometric apparatus for detecting and measuring discontinuities in structural materials from ultrasonic stress waves at their surfaces. The apparatus includes an acousto-optic (a/o) modulator which shifts a portion of a laser beam in frequency, producing a modulated beam of light. This modulated light beam is deflected and passes through an adjustable lens to the surface being measured. The light scattered by the surface is focused by the lens on an end mirror of the laser which produced the original beam, and is divergingly reflected therefrom. The reflected, scattered light is heterodyned with the unshifted portion of the laser beam in a photodiode to produce a phase modulated signals at the acoustic frequency of the a/o modulator. Surface displacement can be measured as a function of instantaneous phase shift, and surface velocity as a function of rate of change of phase shift.

0570 Liquid Crystal Non-Destructive Inspection of Metals
G. J. Pech
Department of the Air Force, Washington, DC
Filed 14 Jun 85 23p
PAT-APPL-6-744 593 Available from NTIS: price code A02
This patent application pertains to a non-destructive visual inspection arrangement for ferrous and non-ferrous metallic workpieces. The inspection arrangement employs a liquid crystal indicator medium and electrical current flow through the workpiece to develop potential differences across work surface flaws that are to be detected. The concepts of direct application of the liquid crystal medium to the work area surface and containment of the liquid crystal medium within a viewing device are also included.

0571 Liquid Level Detector
A. P. Grasso
Department of Energy, Washington, DC
Filed 21 Feb 84 10p
PAT-APPL-6-581 933 Available from NTIS: price code A02
A liquid level detector for low pressure boilers. A boiler tank, from which vapor, such as steam, normally exits via a main vent, is provided with a vertical side tube connected to the tank at the desired low liquid level. When the liquid level falls to the level of the side tube vapor escapes therethrough causing heating of a temperature sensitive device located in the side tube, which, for example, may activate a liquid supply means for adding liquid to the boiler tank. High

READEX FICHE best copy available

liquid level in the boiler tank blocks entry of vapor into the side tube, allowing the temperature sensitive device to cool, for example, to ambient temperature.

0572 Liquid Sampling System
L. L. Larson
Department of Energy, Washington, DC
Filed 17 Sep 84 23p
PAT-APPL-6-648 211 Available from NTIS: price code A02
A conduit extends from a reservoir through a sampling station and back to the reservoir in a closed loop. A jet ejector in the conduit establishes suction for withdrawing liquid from the reservoir. The conduit has a self-healing septum therein upstream of the jet ejector for receiving one end of a double-ended cannula, the other end of which is received in a serum bottle for sample collection. Gas is introduced into the conduit at a gas bleed between the sample collection bottle and the reservoir. The jet ejector evacuates gas from the conduit and the bottle and aspirates a column of liquid from the reservoir at a high rate. When the withdrawn liquid reaches the jet ejector the rate of flow therethrough reduces substantially and the gas bleed increases the pressure in the conduit for driving liquid into the sample bottle, the gas bleed forming a column of gas behind the withdrawn liquid column and interrupting the withdrawal of liquid from the reservoir. In the case of hazardous and toxic liquids, the sample bottle and the jet ejector may be isolated from the reservoir and may be further isolated from a control station containing remote manipulation means for the sample bottle and control valves for the jet ejector and gas bleed. 5 figs.

0573 Liquid Thickness Gage
L. M. Weinstein
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 20 Dec 84 11p
PAT-APPL-6-684 186 Available from NTIS: price code A02
A method and apparatus to measure the thickness of liquid independent of liquid conductivity are disclosed. Two pairs of round, corrosion resistant wire are mounted in an insulating material such that the cross-sectional area of each wire is flush with and normal to the surface. The resistance between each pair of wires are measured using two AC resistance measuring circuits. The ratio of the outputs of the two resistance measuring circuits is indicative of the thickness of the liquid on the surface.

0574 Low-Pressure Water-Cooled Inductively Coupled Plasma Torch
C. J. Seliskar, D. K. Warner
Department of Energy, Washington, DC
Filed 16 Feb 84 10p
PAT-APPL-6-580 983 Available from NTIS: price code A02
An inductively coupled plasma torch is provided which comprises an inner tube, including a sample injection port to which the sample to be tested is supplied and comprising an enlarged central portion in which the plasma flame is confined; an outer tube surrounding the inner tube and containing water therein for cooling the inner tube, the outer tube including a water inlet port to which water is supplied and a water outlet port spaced from the water inlet port and from which water is removed after flowing through the outer tube; and an rf induction coil for inducing the plasma in the gas passing into the tube through the sample injection port. The sample injection port comprises a capillary tube including a reduced diameter orifice, projecting into the lower end of the inner tube. The water inlet is located at the lower end of the outer tube and the rf heating coil is disposed around the outer tube above and adjacent to the water inlet.

0575 Magnetostatic Wave Frequency Analyzer Apparatus
R. E. Floyd
Department of the Air Force, Washington, DC
Filed 3 Jul 84 17p
PAT-APPL-6-627 699 Available from NTIS: price code A02
A magnetostatic wave frequency analyzer apparatus utilizing forward volume waves. A single input transducer is arranged opposite a plurality of output transducers to receive the different frequencies of the generated magnetostatic forward volume wave. A geometric ground plane is positioned in the propagation path between the input transducer and the plurality of output transducers to demonstrate the propagation characteristics of magnetostatic forward volume waves (MSFVW) in the 2-6 GHz range. The waves were propagated in two inch diameter YIG La-doped films of varying thickness (20, 30, 40 microns). The waves were launched by the microstrip input transducers on an alumina substrate. Receiver transducers were also on the substrate, but placed approximately one inch way, in a semi-circle with 10 degrees of arc between adjacent transducers.

Means and Method for Calibrating a Photon Detector Utilizing Electron-Photon Coincidence
See 0174

0576 Measurement of Permittivity and Permeability of Microwave Materials
D. G. Aguirre
Department of the Air Force, Washington, DC
Filed 13 Aug 82, patented 26 Mar 85 10p
PATENT-4 507 602 Available from Comm. of Patents
Using frequency domain techniques, the system measures the complex permittivity and permeability of different materials in Ku band (12.4 to 18 GHz). The measuring system comprises a dual horizontal-plane sectoral horn and sample holder assembly. The two horns are placed month-to-month with the sample holder betwen them. An input signal is supplied to one horn. The reflected signal from the sample comes back out from the same horn, while the transmitted signal goes through the sample and out via the other horn. The signal source is a frequency synthesizer. A network analyzer and a computer are used to determine the complex permittivity and permeability from the transmission and reflection signals.

0577 Method and Apparatus for Detecting Acoustic Emissions from Metal Matrix Wire
G. F. Hawkins
Department of the Air Force, Washington, DC
Filed 9 Jun 83, patented 11 Dec 84 5p
PATENT-4 487 068 Available from Comm. of Patents
Apparatus for detecting acoustic emissions from metal matrix wire allows on-line measurement of the transverse strength of the wire as it is moving through its manufacturing process. A series of end and middle rollers guide the wire and form a bend in it. The location of the bend in the wire is maintained in contact with a liquid bath which, in turn, is contacted by the sensing surface of an acoustic transducer. Acoustic emissions from breaking of the fiber-

matrix interface of the wire are transmitted by the bath and detected by the transducer.

Method and Apparatus for Four-Beam Radar
See 0200

Method and Apparatus for Generating a Structured Light Beam Array
See 1055

0578 Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
L. G. Evans, J. I. Trombka
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 31 Jan 83, patented 20 Nov 84 11p
PATENT-4 483 817 Available from Comm. of Patents
Contaminants in an extended medium such as the wall of a building are mapped by locating neutron excitation source on one side of the wall and a gamma ray spectrometer, including a gamma ray detector on the opposite side of the wall facing the excitation source. The source and detector are moved in unison in discrete steps over opposing wall surfaces so as to determine the chemical composition of the elements in a hemispheric region of the wall adjacent the detector with the radius of the region being substantially that of the mean free path distance of gamma rays emitted from elements interacting with neutrons on the detector side of the wall. The source and detector are reversed for relatively thick walls for mapping the distribution of elements on the other side of the wall thickness. The output of the detector is fed to a multichannel pulse height analyzer where the intensity of the various gamma ray spectral lines are indicated relative to a dominant constituent element such as silicon. Resolution of anomalies such as the presence of voids and/or determining the bulk density of the medium is achieved by substituting a gamma ray source technique is also applied to metal alloys, such as iron alloys, in either the solid or molten state.

0579 Method and Apparatus for Measuring Areas of Photoelectric Cells and Photoelectric Cell Performance Parameters
C. R. Osterwald, K. A. Emery
Department of Energy, Washington, DC
Filed 29 May 84 22p
PAT-APPL-6-614 506 Available from NTIS: price code A02
A laser scanning system for scanning the surface of photovoltaic cell in a precise, stepped raster pattern includes electric current detecting and measuring equipment for sensing the current response of the scanned cell to the laser beam at each stepped irradiated spot or pixel on the cell surface. A computer is used to control and monitor the raster position of the laser scan as well as monitoring the corresponding current responses, storing this data, operating on it, and for feeding the data to a graphical plotter for producing a visual, color-coded image of the current response of the cell to the laser scan. A translation platform driven by stepper motors in precise X and Y distances holds and rasters the cell being scanned under a stationary spot-focused laser beam.

0580 Method and Apparatus for Measuring Minority Carrier Lifetime in a Direct Band-Gap Semiconductor
O. Vonroos
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 18 Dec 84 29p
PAT-APPL-6-683 111 Available from NTIS: price code A03
A direct band-gap semiconductor is exposed to intensity-modulated photon radiation having a characteristic energy at least as great as the energy gap of the semiconductor. This produces a time dependent concentration of excess charge carriers through the material, producing a luminescence signal modulated at the same frequency as the incident radiation but shifted in phase by an amount related to the lifetime of minority carriers. In a preferred embodiment, the phase shift of the luminescence signal is determined by transforming it to a modulated electrical signal and mixing the electrical signal with a reference signal modulated at the same frequency and having a phase which is known relative to the incident radiation. Minority carrier lifetime is calculated by integrating a direct current component of the mixed signal (F sub dc) over a 2 pt range in phase of the reference signal.

0581 Method and Apparatus for Measuring Press Roll Clearance
D. E. Gunderson
Department of Agriculture, Washington, DC
Filed 16 Feb 83, patented 18 Sep 84 7p
PATENT-4 471 531 Available from Comm. of Patents
Method and apparatus for measuring the nip clearance between two rolls rotating close to each other. First and second members are non-rotatably mounted on opposite sides of the nip. Each member has a pair of wheels mounted so that one wheel rotates in contact with only one roll and the other wheel rotates in contact with only the other roll. The nip clearance is a function of the distance between the two members.

0582 Method and Apparatus for Measuring the Gas Permeability of a Solid Sample
D. H. W. Carstens
Department of Energy, Washington, DC
Filed 27 Jan 84 13p
PAT-APPL-6-574 508 Available from NTIS: price code A02
The disclosure is directed to an apparatus and method for measuring the permeability of a gas in a sample. The gas is allowed to reach a steady flow rate through the sample. A measurable amount of the gas is collected during a given time period and then delivered to a sensitive quadrupole. The quadrupole signal, adjusted for background, is proportional to the amount of gas collected during the time period. The quadrupole can be calibrated with a standard helium leak. The gas can be deuterium and the sample can be polyvinyl alcohol.

0583 Method and Apparatus for Sequential Fractionation
A. P. Minton
Department of Health and Human Services, Washington, DC
Filed 16 Apr 85 13p
PAT-APPL-6-724 033 Available from NTIS: price code A02
The invention relates generally to fractionators and more particularly to sequential fractionators.

0584 Method and Apparatus for the Detection of Toxicants
P. J. Hannan, A. V. Stiffey, N. L. Jarvis, H. Wohltjen
Department of the Navy, Washington, DC
Filed 4 Oct 84, patented 23 Apr 85 7p
PATENT-4 513 280 Available from Comm. of Patents
This patent pertains to a method and apparatus for rapidly detecting toxicants via the use of a first CO2 sensing cell and a second reference CO2 sensing cell, with each sensing cell including a first chamber and a second chamber, separated by a C02 permeable membrane, and a pH sensor disposed in each of the second chambers. The method includes the step of placing distilled water in the first chamber of each cell, and allowing its dissolved CO2 to become equilibrated with the water in the second chamber, from which it is separated by the CO2 permeable membrane. Next, exact amounts of microorganism and sugar are added to small dishes in the first chambers along with control vegetation for one dish and vegetation to be tested to the other dish. Then the first chambers are completely filled with distilled water and the dishes are agitated to facilitate a solution of microorganisms and sugar. The method further includes the steps of sensing the pH in the liquid contained in each of the second chambers, determining the difference between the outputs from the pH sensors, and generating an alarm signal if this difference equals or exceeds a predetermined threshold. In one embodiment, yeast is utilized as the microorganism.

0585 Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
G. C. Mooradian, L. B. Stotts
Department of the Navy, Washington, DC
Filed 15 Feb 80, patented 9 Oct 84 7p
PATENT-4 475 816 Available from Comm. of Patents
A true indication of a fluid's absorption coefficient takes into effect the contributing factors of absorption and particle multiple scattering. A pulsed optical source transmits radiation through a relatively large volume of a certain particulate fluid medium. A detector or irradiance meter is gated so as to provide waveforms on a monitor which are characteristic of the absorption and multiple scattering of the medium. Using the transmittance and multiple line spread of the received signal a nearly real-time in situ analysis can be performed to provide scientists, communications specialists, etc. with the capability to anticipate operational parameters.

0586 Method for Determining the Point of Zero zeta Potential of Semiconductors
B. Reichman, C. E. Byvik
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 31 Mar 82, patented 16 Apr 85 7p
PATENT-4 511 838 Available from Comm. of Patents
A method to determine the potential of zero charge of an unpowdered semiconductor material is presented. The semiconductor material is used as the working electrode of a standard three electrode photoelectrochemical cell. The onset potential of the semiconductor material is measured at several different cell temperatures. The slope of the graph of onset potential versus temperature is used to compute the potential of zero charge.

0587 Method of and Apparatus for Measuring Temperature and Pressure
C. L. Korb, J. E. Kalshoven
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 28 May 82, patented 15 Jan 85 17p
PATENT-4 493 553 Available from Comm. of Patents
Laser beams are transmitted through gas to a reflecting target, which may be either a solid surface or particulate matter in gas or the gas molecules. The return beams are measured to determine the amount of energy absorbed by the gas. For temperature measurements, the laser beam has a wavelength at which the gas exhibits a relatively temperature sensitive and pressure insensitive absorption characteristic for pressure measurements, the laser beam has a wavelength at which the gas has a relatively pressure sensitive and temperature insensitive absorption characteristic. To reduce the effects of scattering on the absorption measurements a reference laser beam with a weak absorption characteristic is transmitted colinearly with the data beam having a strong absorption characteristic. The two signals are processed as a ratio to eliminate back scattering. Embodiments of transmitters and receivers described include a sequential laser pulse transmitter and receiver, a simultaneous laser pulse transmitter and receiver.

0588 Method of Characterizing Critical Timing Paths and Analyzing Timing Related Failure Modes in Very Large Scale Integrated Circuits
D. J. Burns
Department of the Air Force, Washington, DC
Filed 28 Mar 85 70p
PAT-APPL-6-716 863 Available from NTIS: price code A04
A method for characterizing critical timing paths and analyzing timing related failure modes in high clock rate photocurrent at the drain of a single transistor in a very large scale integrated circuit. The laser testing apparatus utilized with the method of this invention incorporates therein a laser having its output beam focused onto the drain junction of the transistor under test. The locallized injection of electromagnetic radiation produces a photocurrent at the drain junction at specific times during the testing procedure which increases the logic level transition times associated with that particular node. This causes an increase in the minimum operating power supply and/or a decrease in the maximum operating frequency at which the microcircuit will properly function. Consideration of these parameters and the level of photocurrent provide a measurement related to the worst case timing margin which occurs during functional test of the integrated microcircuit.

0589 Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
J. M. Stacey
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 6 May 82, patented 12 Feb 85 11p
PATENT-4 499 470 Available from Comm. of Patents
A wideband passive synthetic-aperture multichannel receiver with an antenna is mounted on a satellite which travels in an orbit above the Earth passing over large bodies of water, e.g., the Atlantic Ocean. The antenna is scanned to receive signals over a wide frequency band from each incremental surface area (pixel) of the water which are related to the pixel's sea temperature. The received signals are

fed to several channels which are tuned to separate selected frequencies. Their outputs are fed to a processor with a memory for storage. As the antenna points to pixels within a calibration area around a buoy of known coordinates, signals are likewise received and stored. Exactly measured sea temperature is received from the buoy. After passing over several calibration areas, a forward stepwise regression analysis is performed to produce an expression which selects the significant from the insignificant channels and assigns weights (coefficients) to them. The expression is used to determine the sea temperature at each pixel based on the signals received therefrom. Wind temperature, pressure, and wind speed at each pixel can also be calculated.

Method of Measuring Spherical Aberration and Apparatus Therefor
See 1057

0590 Microchannel Plate Streak Camera
C. L. Wang
Department of Energy, Washington, DC
Filed 28 Sep 84 13p
PAT-APPL-6-655 499 Available from NTIS: price code A02
An improved streak camera in which a microchannel plate electron multiplier is used in place of, or in combination with, the photocathode used in prior streak cameras. The improved streak camera is far more sensitive to photons (uv to gamma-rays) than the conventional x-ray streak camera which uses a photocathode. The improved streak camera offers gamma-ray detection with high temporal resolution. It also offers low-energy x-ray detection without attenuation inside the cathode. Using the microchannel plate in the improved camera has resulted in a time resolution of about 150 ps, and has provided a sensitivity sufficient for 1000 keV x-rays.

0591 Miniature Electrooptical Air Flow Sensor
D. D. Kershner
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 14 Apr 83, patented 4 Dec 84 10p
PATENT-4 485 671 Available from Comm. of Patents
A sensor for measuring flow direction and airspeed that is suitable, because of its small size, for rapid instrumentation of research airplanes is described. A propeller driven sphere rotating at a speed proportional to airspeed presents a reflective target to an electro-optical system such that the duty cycle of the resulting electrical output is proportional to yaw angle and the frequency is proportional to airspeed.

0592 Model Mount System for Testing Flutter
M. G. Farmer
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 31 Mar 83, patented 9 Oct 84 9p
PATENT-4 475 385 Available from Comm. of Patents
A wind tunnel model mount system is disclosed for effectively and accurately determining the effects of attack and airstream velocity on a model airfoil or aircraft. The model mount system includes a rigid model attached to a splitter plate which is supported away from the wind tunnel wall several of flexible rods. Conventional instrumentation is employed to effect model rotation through a turntable and to record model flutter data as a function of the angle of attack versus dynamic pressure.

0593 Modulated Voltage Metastable Ionization Detector
G. C. Carle, D. R. Kojiro, D. E. Humphrey
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 22 Feb 84, patented 27 Aug 85 10p
PATENT-4 538 066 Available from Comm. of Patents
The output current from a metastable ionization detector (MID) is applied to a modulation voltage circuit. An adjustment is made to balance out the background current, and an output current, above background, is applied to an input of a strip chart recorder. For low level concentrations, i.e., low detected output current, the ionization potential will be at a maximum and the metastable ionization detector will operate at its most sensitive level. When the detected current from the metastable ionization detector increases above a predetermined threshold level, a voltage control circuit is activated which turns on a high voltage transistor which acts to reduce the ionization potential. The ionization potential applied to the metastable ionization detector is then varied so as to maintain the detected signal level constant. The variation in ionization potential is now related to the concentration of the constituent and a representative amplitude is applied to another input of said strip chart recorder.

0594 Moisture Content and Gas Sampling Device
H. C. Krieg
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 19 Feb 82, patented 7 May 85 14p
PATENT-4 515 751 Available from Comm. of Patents
An apparatus is described for measuring minute quantities of moisture and other contaminants within sealed enclosures such as electronic assemblies which may be subject to large external atmospheric pressure variations. An array of vacuum quality valves is arranged to permit cleansing of the test apparatus of residual atmospheric components from a vacuum source. This purging operation evacuates a gas sample bottle, which is then connected by valve settings to provide the drive for withdrawing a gas sample from the sealed enclosure under test into the sample bottle through a colometric detector tube (Drager tube) which indicates moisture content. The sample bottle may be disconnected and its contents (drawn from the test enclosure) separately subjected to mass spectrograph analysis.

Multi-Color X-Ray Line Source
See 1059

0595 Multi-Layer Coil Assembly Coaxially Mounted Around the Rotary Axis for Preparatory Countercurrent Chromatography
Y. Ito
Department of Health and Human Services, Washington, DC
Filed 14 Mar 83, patented 30 Jul 85 8p
PATENT-4 532 039 Available from Comm. of Patents
The invention relates to continuous countercurrent chromatography systems, and more particularly to an improved system for continuous countercurrent chromatography which employs a horizontal multi-layer helically-coiled tubular array rotating on its longitudinal axis.

0596 Multi-Layer Coil Countercurrent Chromatograph with Adjustable Revolutional Radius
Y. Ito
Department of Health and Human Services, Washington, DC
Filed 23 Nov 83, patented 11 Dec 84 6p
PATENT-4 487 693 Available from Comm. of Patents
The invention is a flow-through apparatus for two-phase countercurrent chromatography consisting of a multi-layer helically coiled column carried on a flanged reel mounted on a frame revolving on a first axis. The reel rotates on a second axis parallel to and spaced from the first axis, at the same angular velocity and in the same direction as the frame to prevent twisting of its inlet and outlet flow tubes, which extend through an axial passage in a shaft portion of the reel. The reel has opposite shaft portions which are journalled in detachable opposite bearing blocks carried by the frame.

0597 Multiple Site Laser Excited Pollution Monitoring System
J. A. Gelbwachs
Department of the Air Force, Washington, DC
Filed 9 Feb 82, patented 14 May 85 6p
PATENT-4 516 858 Available from Comm. of Patents
A multiple site laser excited pollution monitoring system having a single laser located at a central location capable of providing a laser output beam, deflected in timed sequence, in a plurality of distinct different directions. Transmitting means, preferably in the form of a plurality of optical fibers, transmit the laser output beam in timed sequence to a plurality of remotely located laser excited pollution detectors (photoacoustic detector heads). Signals from the pollution detectors are transmitted to a signal processor and display unit also located at the central location. As a consequence thereof, a single laser can provide power for a plurality of laser excited detectors at a multiplicity of remote sites and thereby greatly reduce the expense involved in detecting the presence of pollutants at each of the plurality remote locations.

0598 Multiple-Stage Integrating Accelerometer
H. F. Devaney
Department of Energy, Washington, DC
Filed 27 Jun 84 32p
PAT-APPL-6-625 326 Available from NTIS: price code A03
An accelerometer assembly is provided for use in activating a switch in response to multiple acceleration pulses in series. The accelerometer includes a housing forming a chamber. An inertial mass or piston is slidably disposed in the chamber and spring biased toward a first or reset position. A damping system is also provided to damp piston movement in response to first and subsequent acceleration pulses. Additionally, a cam, including a Z-shaped slot, and cooperating follower pin slidably received therein are mounted to the piston and the housing. The middle or cross-over leg of the Z-shaped slot cooperates with the follower pin to block or limit piston movement and prevent switch activation in response to a lone acceleration pulse. The switch of the assembly is only activated after two or more separate acceleration pulses are sensed and the piston reaches the end of the chamber opposite the reset position.

0599 Non-Bonded Ultrasonic Transducer
J. M. Eoff
Department of Energy, Washington, DC
Filed 6 Jul 84 14p
PAT-APPL-6-628 078 Available from NTIS: price code A02
A mechanically assembled non-bonded ultrasonic transducer includes a substrate, a piezoelectric film, a wetting agent, a thin metal electrode, and a lens held in intimate contact by a mechanical clamp. No epoxy or glue is used in the assembly of this device.

0600 Nondestructive Noncontact Device to Characterize Semiconductor Material
C. G. Walker, G. A. Tanton
Department of the Army, Washington, DC
Filed 7 Feb 85 7p
PAT-APPL-6-699 282 Available from NTIS: price code A02
A semiconductor single crystal wafer is positioned in a magnetic field. A computer initializes the light level and the electronic gain of each detector preamp associated with a fiber optic link from the analyzer. The magnetic field direction would then be reversed by computer command. This would cause a localized change in intensity of light passing through the wafer, due to Faraday Rotation. The resulting change in detector output together with location and wavelength data could be used to compute a map of the wafer. Additional keyword: Patents.

0601 On-Line Temperature Sensor
W. E. Cawley
Department of Energy, Washington, DC
Filed 27 Jul 84 12p
PAT-APPL-6-635 022 Available from NTIS: price code A02
An on-line outlet temperture monitoring device is disclosed to back up readings provided by stationary temperature detectors on individual process tubes in a nuclear reactor. The monitoring device includes a highly accurate temperature sensor that can be selectively coupled to the outlet end of any chosen process tube to verify temperature readings pertaining to that process tube. Specifically, the sensor is suspended in a movable enclosure that can be shifted into position about a supporting wall for the protruding ends of the process tubes. The movable sensor is used to back up readings provided by the stationary temperature detectors and to recalibrate the stationary temperature detectors so as to permit their use at lower tolerance limits.

0602 Opacity Control Technique for Jet Engine Test Cells
R. E. Glass
Department of the Navy, Washington, DC
Filed 25 Feb 85 11p
PAT-APPL-6-705 760 Available from NTIS: price code A02
An improvement for jet engine test cells calls for the introduction of heated ambient air into the jet engine exhaust to reduce the opacity of the vented exhaust. Introducing reasonable amounts of cool ambient air does not reduce opacity. Heating is provided by a manifold about the exhaust duct that draws in ambient air or that recirculate a part of the exhaust. This approach is effective and can modify existing structure without excessive cost.

0603 Optical Waveguide Sensor for Methane Gas
J. F. Giuliani
Department of the Navy, Washington, DC
Filed 7 Mar 85 28p
PAT-APPL-6-709 251 Available from NTIS: price code A03
This patent application discloses a device for detecting small amounts of alkanes such as methane, ethane, propane, and butane gases. The device comprises an optical waveguide and a light source for propagating light therethrough, apparatus for obtaining samples of air to be tested; apparatus for adding water vapor to these air samples to yield a gas mixture with at least a 30% relative humidity; and means for flowing this mixture over the surface of the optical waveguide at a rate sufficient to favor condensation of the mixture on the waveguide surface to thereby form a thin film thereon. The presence of alkanes is determined by detecting the intensity of the light after propagation through the optical waveguide and then comparing that detected intensity to a reference. In a preferred embodiment, the optical waveguide is an optical glass capillary in which the surface is closed in a lenslike configuration at the detector end.

0604 Optical 3-D Signature Device for Detecting Chemical Agents
T. W. Barrett, J. F. Giuliani
Department of the Navy, Washington, DC
Filed 29 Nov 84 31p
PAT-APPL-6-676 044 Available from NTIS: price code A03
An optical device for obtaining a 3-dimensional signature or a plurality of 2-dimensional signatures for a given sample in order to detect predetermined chemical agents. The device comprises a light channel with a first sensing optical fiber with a coating thereon which changes its absorptive and refractive properties in the presence of a predetermined chemical agent, and a second light channel with a reference optical fiber isolated from the sample. A scanning monochromator is utilized to apply light beams to the sensing and reference fibers, and an optical fiber isolated from the sample. A scanning monochromator is utilized to apply light beams to the sensing and reference fibers, and an optical detector is used to cross-correlate the outputs from the sensing and reference fibers. A variable optical delay line is disposed in one of the fiber channels in order to scan from 0 deg. to 360 deg. in phase shift for each light frequency. A 2-dimensional cross-correlation is obtained for this scan at this frequency. The scanning monochromator is set to run through a series of light frequencies in a given bandwidth. A 2-dimensional cross-correlation phase scan is obtained at each different light frequency. A 3-dimensional cross-correlation may then be obtained (cross-correlation value vs frequency vs phase delay) to provide a signature for a given sample which can be compared to known samples.

0605 Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers
R. W. Hess, P. A. Davis, W. T. Davis
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 14 Mar 85 8p
PAT-APPL-6-711 551 Available from NTIS: price code A02
A method and apparatus for obtaining dynamic calibrations of pressure transducers is presented. A calibration head, a flexible tubing and a bellows enclose a volume of air at atmospheric pressure with a transducer to be calibrated subject to the pressure inside the volume. All of the other apparatus applies oscillations to the bellows causing the volume to change thereby applying oscillating pressures to the transducer whereby the transducer can be calibrated.

0606 Oxygen Analyzer
W. H. Benner
Department of Energy, Washington, DC
Filed 8 May 84 19p
PAT-APPL-6-608 282 Available from NTIS: price code A02
An oxygen analyzer which identifies and classifies microgram quantities of oxygen in ambient particulate matter and for quantitating organic oxygen in solvent extracts of ambient particulate matter. A sample is pyrolyzed in oxygen-free nitrogen gas (N sub 2), and the resulting oxygen quantitatively converted to carbon monoxide (CO) by contact with hot granular carbon (C). Two analysis modes are made possible: (1) rapid determination of total pyrolyzable obtained by decomposing the sample at 1135 deg C, or (2) temperature-programmed oxygen thermal analysis obtained by heating the sample from room temperature to 1135 deg C as a function of time. The analyzer basically comprises a pyrolysis tube containing a bed of granular carbon under N sub 2 , ovens used to heat the carbon and/or decompose the sample, and a non-dispersive infrared CO detector coupled to a mini-computer to quantitate oxygen in the decomposition products and control oven heating.

0607 Phase-Lock Fiber Optic Interferometer
I. J. Bush
Department of the Navy, Washington, DC
Filed 27 May 82, patented 4 Dec 84 9p
PATENT-4 486 657 Available from Comm. of Patents
A fiber optic acoustic sensing system for tracking a phase shift linearly over a wide range thereby allowing accurate tracking in the presence of temperature induced phase fluctuation. In one embodiment, light from a laser is split and coupled into both legs of a fiber interferometer. One leg is phase modulated by the acoustic signal while the other leg is phase modulated by a first and second piezoelectric cylindrical modulators. The second modulator is driven at omega sub m to effectively shift the acoustic information up in frequency into the sidebands of the carrier omega sub m. The light signals in the two legs are combined, detected, cross-correlated with the carrier omega sub m to produce an error signal, and then low pass filtered. This filtered error signal is fed back to control the first modulator. The first modulator keeps the interferometer locked in phase by effectively cancelling out the phase produced by temperature and acoustic pressure fluctuations. To effect this cancellation, the first modulator must inversely duplicate the phase shift thereby producing the desired output signal.

Phased Antenna Array for Wind Profiling Applications
See 0206

0608 Picosecond Broadband CARS (Coherent Antistokes Raman Spectroscopy) Probe Using the Picosecond Continuum
L. S. Goldberg
Department of the Navy, Washington, DC
Filed 14 Apr 83, patented 23 Apr 85 8p
PATENT-4 512 660 Available from Comm. of Patents
A coherent anti-Stokes Raman spectroscopy (CARS) method and apparatus for producing a broadband CARS vibrational spectrum of a sample in a single picosecond laser

pulse. A laser pulse having a picosecond duration and a frequency of omega is directed into a liquid cell containing D2O which generates a picosecond continuum pulse having a broad range of frequencies omega (WL) and a picosecond duration. A second harmonic of the laser pulse is produced to form a probe pulse having a frequency of omega (1) and a picosecond duration. The probe pulse and the continuum pulse are spatially and temporally combined and the combined pulses are directed into a sample to excite the Raman active vibrational resonances in the sample. In response the sample emits a beam of radiation which contains an anti-Stokes spectrum of energy characteristic of the sample. The anti-Stokes spectrum is separated from the beam of radiation for detection and analysis.

0609 Portable Pallet Weighing Apparatus
R. M. Day
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 19 Aug 82, patented 30 Oct 84 6p
PATENT-4 479 560 Available from Comm. of Patents
An assembly for use with several like units in weighing the mass of a loaded cargo pallet supported by its trunnions has a bridge frame for positioning the assembly on a transportation frame carrying the pallet while straddling one trunnion of the pallet and its trunnion lock, and a cradle assembly for incrementally raising the trunnion. The mass at the trunnion is carried as a static load by a slidable bracket mounted upon the bridge frame for supporting the cradle assembly. The bracket applies the static loading to an electrical load cell symmetrically positioned between the bridge frame and the bracket. The static loading compresses the load cell, causing a slight deformation and a potential difference at load cell terminals which is proportional in amplitude to the mass of the pallet at the trunnion.

0610 Portable Reflectance Spectrometer
A. F. H. Goetz, R. A. Graham, T. Ozawa
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 24 Mar 75, patented 23 Aug 77 9p
PATENT-4 043 668 Available from Comm. of Patents
A portable reflectance spectrometer is disclosed. The spectrometer essentially includes an optical unit and an electronic recording unit. The optical unit includes a pair of thermoelectrically-cooled detectors, for detecting total radiance and selected radiance projected through a circular variable filter wheel, and is capable of operating to provide spectral data in the range 0.4 to 2.5 micrometers without requiring coventional substitution of filter elements. The electronic recording unit includes power supplies, amplifiers, and digital recording electronics designed to permit recordation of data on tape casettes. Both the optical unit and electronic recording unit are packaged to be manually portable.

0611 Portable Remote Laser Sensor for Methane Leak Detection
W. B. Grant, E. D. Hinkley
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 24 Sep 82, patented 18 Dec 84 13p
PATENT-4 489 239 Available from Comm. of Patents
A portable laser system for remote detection of methane gas leaks and concentrations is disclosed. The system transmitter includes first and second lasers, tuned respectively to a wavelength coincident with a strong absorption line of methane and a reference wavelength which is weakly absorbed by methane gas. The system receiver includes a spherical mirror for collecting the reflected laser radiation and focusing the collected radiation through a narrowband optical filter onto an optial detector. The filter is tuned to the wavelength of the two lasers, and rejects background noise. The output of the optical detector is processed by a lock-in detector synchronized to the chopper, and which measures the difference between the first wavelength signal and the reference wavelength signal.

0612 Projection Lens Scanning Laser Velocimeter System
W. D. Gunter, A. DeYoung
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 18 Jan 85 13p
PAT-APPL-6-692 745 Available from NTIS: price code A02
A laser Doppler velocimeter system is disclosed that has a laser, a waist position adjusting lens, and a beam splitter which direct laser beams parallel to the optical axis of the negative lens. The negative lens is fixed relative to an afocal lens pair. A pair planar mirrors intersect at right angles and respectively intersect the optical axis and the optical axis of the afocal lens pair. Mirrors are movable along the optical axis toward and away from the afocal lens pair to focus the laser beams in focus area while maintaining a constant beam waist, crossing angle, and intersection with other laser beams. This produces a constant sensitive volume as the focus is changed.

0613 Psychrometer for Measuring the Humidity of a Gas Flow
A. C. Kent, H. N. Rosen
Department of Agriculture, Washington, DC
Filed 5 Oct 81, patented 24 Jul 84 6p
PATENT-4 461 167 Available from Comm. of Patents
In a psychrometer for measuring the humidity of a gas flow, especially a gas flow having a temperature of above 100C, a flow of liquid is supplied to a wick surrounding the wet sensor via a preheater which heats the liquid to approximately the wet bulb temperature of the gas stream before the liquid comes into contact with the wet sensor, thereby avoiding cooling of the wet sensor by the liquid. The necessary preheating of the liquid can be achieved largely by heat exchange between the liquid and the gas flow downstream of the wet sensor; such heat exchange may be effected in part by using an auxiliary wick from which a portion of the liquid evaporates before the rest of the liquid reaches the main wick.

0614 Rain Rate Meter
V. G. Plank, S. D. Crist, D. I. LaGross
Department of the Air Force, Washington, DC
Filed 7 Apr 83, patented 16 Oct 84 8p
PATENT-4 476 718 Available from Comm. of Patents
A rain rate meter for delineating short-term variations in rain rate having a housing which encloses an electronic balance sensitive to approximately 0.01 grams. The top of the housing is open and has a funnel-shaped element located therein for receiving rainfall. An outlet port is centrally located at the bottom of the funnel-shaped element and a dispersing means is positioned adjacent the outlet port for substantially eliminating the adverse effects of the downward momentum of the rain water flowing from the outlet port prior to being collected by a container which rests upon the balance in the housing. A transfer mechanism is situated in the container in order to gently deposit the flowing rain water into the container. Measurements of collected rainfall

weight are made over a preselected period of time by the electronic balance in order to accurately ascertain rain rate.

0615 Random Pattern Tracking Acceleration Tolerance Tester
D. W. Repperger
Department of the Air Force, Washington, DC
Filed 29 Aug 84 43p
PAT-APPL-6-645 390 Available from NTIS: price code A03
A G force acceleration effects monitoring apparatus involving a pair of LED or other visual stimulus arrays, one randomly patterned by an electronic driving apparatus and one patterned by the manipulation of a G force test subject. The electronic driving apparatus preferably includes a sum of sines algorithm and the test subject manipulation are received preferably from a joystick controller. Mounting of the apparatus in a centrifuge gondola and also in off-line training stations and use of the invention by animals are also disclosed. This invention relates to the field of G force acceleration effect sensing accomplished by way of visual field and psychomotor tracking performance evaluation in a test subject. When a human subject is exposed to increasing G force acceleration, a well-established sequence of degradation changes in the subject's blood circulation occur.

0616 Ranging System Which Compares an Object Reflected Component of a Light Beam to a Reference Component of the Light Beam
J. M. Mclauchlan, J. Auyeung, E. F. Tubbs, W. C. Goss, D. Psaltis
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 28 Sep 82, patented 6 Aug 85 8p
PATENT-4 533 242 Available from Comm. of Patents
A system is described for measuring the distance to an object by comparing a first component of a light pulse that is reflected off the object with a second component of the light pulse that passes along a reference path of known length, which provides great accuracy with a relatively simple and rugged design. The reference path can be changed in precise steps so that it has an equivalent length approximately equal to the path length of the light pulse component that is reflected from the object. The resulting small difference in path lengths can be precisely determined by directing the light pulse components into opposite ends of a detector formed of a material that emits a second harmonic light output at the locations where the opposite going pulses past simultaneously across one another.

0617 Remote Optical Crack Sensing System
S. L. Huang, A. Scotese, M. Libeskind
Department of the Navy, Washington, DC
Filed 12 Oct 84 12p
PAT-APPL-6-660 349 Available from NTIS: price code A02
An apparatus is disclosed for remotely detecting cracks of sub-critical length which originate from stress raisers in structural material, wherein the apparatus typically comprises a source of light, a continuous length of optical fiber to conduct the light, strain responsive devices coupled to the fiber and bonded to the structural member in close proximity to the stress raisers, and a light responsive detector which is optically coupled to the fiber in order to detect breaks in the fiber induced by either tensile or shear forces eminating from cracks around the stress raisers.

0618 Remote Sequential Gas Sampler for Blasting Areas
A. T. Iannacchione, D. H. Lawhead, J. H. Perry
Department of the Interior, Washington, DC
Filed 25 Apr 83, patented 4 Sep 84 5p
PATENT-4 468 973 Available from Comm. of Patents
A gas sampling device whose operation is activated by the blast whose gas is to be sampled. This blast activates a switch which in turn starts the operation box which thereafter sequentially outputs pneumatic signals at preset time intervals. These signals are received by a sampling unit assembly which functions in response thereto to receive and retain a gas sample from the blast.

0619 Remote Temperature-Set-Point Controller
W. F. Burke, A. L. Winiecki
Department of Energy, Washington, DC
Filed 17 Oct 84 10p
PAT-APPL-6-661 843 Available from NTIS: price code A02
An instrument is described for carrying out mechanical strain tests on metallic samples with the addition of means for varying the temperature with strain. The instrument includes opposing arms and associated equipment for holding a sample and varying the mechanical strain on the sample through a plurality of cycles of increasing and decreasing strain within predetermined limits, circuitry for producing an output signal representative of the strain during the tests, apparatus including a a set point and a coil about the sample for providing a controlled temperature in the sample, and circuitry interconnected between the strain output signal and set point for varying the temperature of the sample linearly with strain during the tests.

Retinal Information Mapping System
See 0874

0620 Reversible Optical Waveguide Vapor Sensor
J. F. Giuliani, H. Wohltjen
Department of the Navy, Washington, DC
Filed 31 Jan 83, patented 23 Apr 85 5p
PATENT-4 513 087 Available from Comm. of Patents
A device for detecting small amounts of a chemical such as ammonia, and other ammonia-like molecules such as hydrazine or pyridine, in air and in other gases is disclosed. A capillary tube serves as a multiple total reflective medium for an optical beam from a light-emitting diode. The outer surface of the capillary tube is coated with a dye which, when exposed to the chemical, changes color so that the multiply reflected light is modified. The resultant change in the output light intensity from the capillary tube is photodetected and recorded to sense the presence of the chemical. When the chemical is removed, the dye returns to its original color so that the device can be reused.

0621 Rotating Squid Magnetometers and Gradiometers
T. G. Berlincourt
Department of the Navy, Washington, DC
Filed 10 Dec 80, patented 18 Dec 84 18p
PATENT-4 489 274 Available from Comm. of Patents
A method and apparatus for measuring the strength, direction and gradients of an unknown magnetic field, through the use of rotating superconducting quantum interference devices (SQUID). The apparatus utilizes SQUID magnetometers, off-diagonal SQUID gradiometers and diagonal SQUID gradiometers mounted upon a rotatable and translatable element to a plurality of positions in space. The instantaneous outputs of a plurality of SQUID devices are

electronically analyzed to provide the magnetic field and gradient measurements.

0622 Rotor Blade Test Apparatus
E. C. Taschner
Department of the Air Force, Washington, DC
Filed 24 May 85 13p
PAT-APPL-6-737 377 Available from NTIS: price code A02
This patent application discloses a rotor blade test apparatus having a striking solenoid to strike a rotor blade to generate an audio signal. A microphone receives the audio signal and applies it to a spectrum analyzer wherein the predominant natural frequencies of the rotor blade are determined.

0623 Scanning Alarm Electronic Processor
R. A. Stutler
Department of the Navy, Washington, DC
Filed 5 Jul 84 21p
PAT-APPL-6-628 093 Available from NTIS: price code A02
A scanning alarm electronic processor (hereinafter SAEP) for receiving and evaluating a predetermined number of analog signals is configured to perform, inter alia, high speed/high resolution analog computations thereon using micro-programmable methods and devices. The SAEP uses unique, parallel pipeline processing of certain functions to obtain the desired high sample rates. The SAEP is divided into two sections which contribute to its high speed performance. Each section contains the circuitry; i.e., modules, necessary to perform the algorithms for half of the predetermined number of analog signals. A common central processing unit module ties the two sections together. The SAEP operates to compute a droop compensated differential voltage for each one of the predetermined number of analog signals, to compute a weighted sum of the differential voltages, and to compare the weighted sum with an absolute value and perform an alarm evaluation.

0624 Shear Wave Transducer for Boreholes
N. H. Mao
Department of Energy, Washington, DC
Filed 23 Aug 84 24p
PAT-APPL-6-643 348 Available from NTIS: price code A02
A technique and apparatus is provided for estimating in situ stresses by measuring stress-induced velocity anisotropy around a borehole. Two sets each of radially and tangentially polarized transducers are placed inside the hole with displacement directions either parallel or perpendicular to the principal stress directions. With this configuration, relative travel times are measured by both a pulsed phase-locked loop technique and a cross correlation of digitized waveforms. The biaxial velocity data are used to back-calculate the applied stress.

0625 Shielded Sniffing Device
W. K. Heiland, P. Magidman
Department of Agriculture, Washington, DC
Filed 29 Jun 83, patented 23 Oct 84 8p
PATENT-4 478 096 Available from Comm. of Patents
A device for detecting contraband in closed luggage is provided. The device is especially useful for detecting fruits, vegetables, foodstuffs and other materials that give off carbon dioxide.

Simple Power Meter for High Energy Pulsed Lasers
See 1021

0626 Snow Scale/Rate Meter
V. G. Plank, A. J. Matthews, R. O. Berthel, D. L. LaGross
Department of the Air Force, Washington, DC
Filed 18 Nov 82, patented 19 Feb 85 7p
PATENT-4 499 761 Available from Comm. of Patents
A snow scale/rate meter having a highly accurrate weight sensing device enclosed in a thermally controlled environment. A clear plastic collection bucket is operably connected by means of an elongated shaft to the weight sensing device. In addition, a plurality of wind protection device surround the collection bucket as well as the limit collected snowfall to snowfall having trajectories of 45 deg. or less from the vertical. Snowfall weight and rate data can be accurately provided by this meter over extremely short intervals of times during in-the-field operation.

0627 Soil Extraction Kit
J. R. Aldrich
Department of the Air Force, Washington, DC
Filed 29 Jan 85 13p
PAT-APPL-6-696 129 Available from NTIS: price code A02
A method and apparatus is disclosed for producing an extract for testing substances including soil and water for contamination by polychlorinated biphenyl (PCB), using commercially available test units which are normally limited to testing transformer oils. The method consists of: taking a sample of a substance suspected of PCB contamination; mixing it with an equal mass of hexane solvent in a sample bottle; and shaking the sample bottle by hand for 30 seconds to yield a hexane extract. The hexane extract is then analyzed using the commercially available field test kit. Finally, the results yielded by the commercially available field test kit are multiplied by a scaling factor to yield an estimate of the actual amount of PCB contamination in the sample.

0628 Soil Sampling Apparatus
E. J. Wehunt, C. S. Helling, J. Feldmesser, W. R. Joyner
Department of Agriculture, Washington, DC
Filed 2 Aug 84 15p
PAT-APPL-6-637 241 Available from NTIS: price code A02
This invention relates to an apparatus for determining the fate of substances in soil and more particularly to an apparatus for obtaining uncontaminated soil samples and for eliminating a source of contamination.

0629 Solid Sorbent Air Sampler
T. J. Galen
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 10 Oct 84 19p
PAT-APPL-6-659 474 Available from NTIS: price code A02
A fluid sampler for collecting a plurality of discreet samples over separate time intervals is presented. The sampler comprises a sample assembly with an inlet and a plurality of discreet sample tubes each of which has inlet and outlet sides. A multiport dual acting valve is provided in the sampler to sequentially pass air from the sample inlet into the selected sample tubes. The sample tubes extend longitudinally from the housing and are located at its outer periphery so that upon removal of an enclosure cover, they are readily accessible for analytical operation of the sampler.

0630 Spring Loaded Thermocouple Module
T. E. McKelvey, J. J. Guarnieri
Department of Energy, Washington, DC
Filed 13 Mar 84 14p
PAT-APPL-6-589 253 Available from NTIS: price code A02
A thermocouple arrangement is provided for mounting in a blind hole of a specimen. The thermocouple arrangement includes a cup-like holder member, which receives an elongated thermal insulator, one end of which is seated at an end wall of the holder. A pair of thermocouple wires, threaded through passageways in the insulator, extend beyond the insulator member, terminating in free ends which are joined together in a spherical weld bead. A spring, held captive within the holder, applies a bias force to the weld bead, through the insulator member. The outside surface of the holder is threaded for engagement with the blind hole of the specimen. When the thermocouple is installed in the specimen, the spherical contact surface of the weld bead is held in contact with the end wall of the blind hole, with a predetermined bias force.

0631 State-of-Charge Coulometer
J. J. Rowlette
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 9 Apr 82, patented 12 Feb 85 15p
PATENT-4 499 424 Available from Comm. of Patents
A coulometer for accurately measuring the state-of-charge of an open-cell battery utilizing an aqueous electrolyte, includes a current meter for measuring the battery/discharge current and a flow meter for measuring the rate at which the battery produces gas during charge and discharge. Coupled to the flow meter is gas analyzer which measures the oxygen fraction of the battery gas. The outputs of the current meter, flow meter, and gas analyzer are coupled to a programmed microcomputer which includes a CPU and program and data memories. The microcomputer calculates that fraction of charge and discharge current consumed in the generation of gas so that the actual state-of-charge can be determined. The state-of-charge is then shown on a visual display.

0632 Sub-Micron Particle Sampler Apparatus and Method for Sampling sub-Micron Particles
D. D. Gay, W. G. McMillan
Department of Energy, Washington, DC
Filed 12 Apr 84 38p
PAT-APPL-6-599 292 Available from NTIS: price code A03
Apparatus and method steps for collecting sub-micron sized particles include a collection chamber and cryogenic cooling. The cooling is accomplished by coil tubing carrying nitrogen in liquid form, with the liquid nitrogen changing to the gas phase before exiting from the collection chamber in the tubing. Standard filters are used to filter out particles of diameter greater than or equal to 0.3 microns; however, the present invention is used to trap particles of less than 0.3 micron in diameter. A blower draws air to said collection chamber through a filter which filters particles with diameters greater than or equal to 0.3 micron. The air is then cryogenically cooled so that moisture and sub-micron sized particles in the air condense into ice on the coil. The coil is then heated so that the ice melts, and the liquid is then drawn off and passed through a Buchner funnel where the liquid is passed through a Nuclepore membrane. A vacuum draws the liquid through the Nuclepore membrane, with the Nuclepore membrane trapping sub-micron sized particles therein. The Nuclepore membrane is then covered on its top and bottom surfaces with sheets of Mylar and the assembly is then crushed into a pellet. This effectively traps the sub-micron sized particles for later analysis. 6 figures.

0633 Surface Acoustic Wave Device for Sensing the Presence of Chemical Agents
A. Ballato
Department of the Army, Washington, DC
Filed 7 Aug 85 15p
PAT-APPL-6-763 164 Available from NTIS: price code A02
A surface acoustic wave device is provided for sensing the presence of chemical agents by cheo-electronic means. The device includes a quartz substrate and means deposited on the substrate for propagating and receiving surface acoustic waves along the surface of the substrate. Regions are provided on the substrate containing etched tunnels, the walls of the etched tunnel being coated within with a chemical substance sensitive to the chemical agent to be detected. When surface acoustic waves are caused to pass over these regions, the reaction of the chemical agent to be detected with the chemical substance causes a change in the acoustic wave velocity.

0634 System for Controlling the Oxygen Content of a Gas Produced by Combustion
J. J. Singh, W. T. Davis, R. L. Puster
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 23 Jul 84 10p
PAT-APPL-6-633 178 Available from NTIS: price code A02
A mixture of air, CH4 and OH(2) is burned in a combustion chamber to produce a product gas in the test section. The OH(2) content of the product gas is compared with the OH(2) content of reference air in an OH(2) sensor. If there is a difference an error signal is produced at the output of a control circuit which by the means of a solenoid valve, regulates the flow of OH(2) into the combustion chamber to make the error signal zero. The product gas in the test section has the same oxygen content as air.

0635 Systems for Monitoring Changes in Elastic Stiffness in Composite Materials
R. D. Kriz
Department of Commerce, Washington, DC
Filed 22 Jul 82, patented 19 Feb 85 6p
PATENT-4 499 770 Available from Comm. of Patents
Traversing energy flux transmitted into a fiber/matrix composite structure is propagated through the structure in directions which vary depending upon the elastic stiffness condition of the composite. Degradation in elastic stiffness of the composite, from any cause, will result in variations in the direction of travel of the flux through the composite. By determining the direction of flux propagation in the composite, or the portion of the composite structure from which the flux is detected as it exists the structure, the condition of the composite structure, independent of the source of degradation, can be determined. In preferred embodiments the energy flux is ultra-sound energy, while in preferred testing devices a single transmitting transducer is directed towards at least two receiving transducers, for example, one located at a position to receive some flux in the total absence of stiffness degradation, and a second located at a position to receive some flux which would have traveled through a stiffness degraded structure.

0636 Technique for Measuring Gas Conversion Factors
J. J. Singh, D. R. Sprinkle
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 23 Jul 84 12p
PAT-APPL-6-633 179 Available from NTIS: price code A02
A method for determining hydrocarbon conversion factors for a flowmeter is described. A mixture of air, O2 and C(x)H(y) is burned and the partial pressure of the O2 in the resulting gas is forced to equal the partial pressure of O2 in the air. The flow rate of the O2 flowing into the mixture is measured and the flow rate of C(x)H(y) flowing into the mixture is measured. These measured values are used to calculate the conversion factors F = O2 flow rate/(m/n)x reading on the dial of the flowmeter where m/n is calculated in the product gas for the hydrocarbon C(x)H(y) with the assumption that the mole fraction of oxygen in the product gas is the same as the air.

0637 Tensile Testing Apparatus
L. B. Blackburn, J. R. Ellingsworth
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 19 Mar 84, patented 20 Aug 85 10p
PATENT-4 535 636 Available from Comm. of Patents
An improved mechanical extensometer is described for use with a constant load creep test machine. The dead weight of the extensometer is counterbalanced by two pairs of weights connected through a pulley system and to rod extension and leading into the furnace where the test sample is undergoing elevated temperature (above 500 F.) tensile testing. Novel gripper surfaces, conical tip and flat surface are provided in each sampling engaging platens to reduce the grip pressure normally required for attachment of the extensometer to the specimen and reduce initial specimen bending normally associated with foil-gage metal testing.

0638 Test Device for Expendable Bathythermograph Set (XBT)
P. G. Danforth, T. G. Bucko, K. R. Galliher, J. T. Lucia, R. L. Miller
Department of the Navy, Washington, DC
Filed 2 Feb 83, patented 21 May 85 8p
PATENT-4 518 915 Available from Comm. of Patents
This patent discloses a stand-alone electronic simulator device for testing expendable bathythermograph (XBT) systems. The device is inserted into an XBT system in place of an expendable probe for purposes of checking the performance of the rest of the system with and active test signal. The test device simulates an operational XBT probe by switching a highly accurate and stable array of resistance values across its output. The switching rate is controlled by a stable internal time base such that the test pattern plotted on the strip chart recorder and transmitted to an external system will always look the same if the system is functioning properly. Temperature ambient temperature range which may be encountered in use, allows checks of the system for probe depth timing linearization in addition to temperature measurement.

0639 Thin Film Strain Transducer
J. L. Rand
National Aeronautics and Space Administration, Wallops Island, VA. Wallops Station
Filed 26 Aug 83, patented 12 Feb 85 7p
PATENT-4 498 231 Available from Comm. of Patents
A strain transducer system and process for making same is disclosed wherein a beryllium-copper ring having four strain gages disposed thereon is electrically connected in Wheatstone bridge fashion to output instrumentation. Tabs are bonded to a balloon or like surface with strain on the surface causing bending of the ring and providing an electrical signal through the gages proportional to the surface strain. A figure is provided which illustrates a pattern of a one-half ring segment as placed on a sheet of beryllium-copper for chem-mill etch formation, prior to bending and welding of a pair of the segments to form a ring structure.

0640 Three-Dimensional and Tomographic Imaging Device for X-ray and gamma-Ray Emitting Objects
L. I. Yin
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 21 Jan 83, patented 4 Jun 85 10p
PATENT-4 521 688 Available from Comm. of Patents
An instrument for obtaining quantitative, three-dimensional and tomographic information relating to X-ray and gamma-ray emitting objects and for the orthoscopic viewing of such objects includes a multiple-pinhole aperture plate held spaced from an X-ray or gamma-ray to visible-light converter which is coupled to a visible-light image intensifier. The spacing between the aperture plate and the converter is chosen such that the mini-images of an emitting object formed by the pinholes do not substantially overlap as they impinge on the converter. The output of the image intensifier is digitized by a digitizing camera in terms of position and intensity and fed into a digital computer. The computer may output quantitative information relating to the emitting object directly, such as that relating to tomograms, or provide information in analogue form when coupled with a suitable viewing device to give an orthoscopic, three-dimensional image of the object.

0641 Time Resolved Extended X-Ray Absorption Fine Structure Spectrometer
H. W. Huang
Department of the Navy, Washington, DC
Filed 17 May 85 19p
PAT-APPL-6-734 986 Available from NTIS: price code A02
The present invention relates to an X-ray spectrometer for obtaining EXAFS data from a target material. The target material is exposed to incident pulsed synchrotron/X-ray radiation having a selected range of continuous spectrum and intensity suitable for obtaining EXAFS data from the material. The transmitted or fluorescence X-rays is detected and integrated over a period of time. The integrator is controlled by a rate synchronous with the pulsed radiation. The integration time of the integrator can be varied. A xenon flash is provided for exciting appropriate materials and is controlled by a gating device which is also synchronized with the radiation pulses.

0642 Torque Sensor
E. F'Geppert
Department of the Army, Washington, DC
Filed 4 Sep 84 9p
PAT-APPL-6-647 324 Available from NTIS: price code A02
In a rotary drive system, mechanical means for sensing turning torque generated by the load forces. The sensing means is designed to operate with minimal effect on normal operation of the drive system. The invention can be employed in various drive systems, e.g., automotive engine-

transmission power plants, electric motor-operated tools, and metal cutting machines. In such drive systems, the torque-sensing feature may be useful for actuation of various control devices, such as electric switches, mechanical clutches, brake actuators, fluid control valves, or audible alarms. The torque-sensing function can be used for safety overload relief, motor de-energization, engine fuel control transmission clutch actuation, remote alarm signal, tool breakage signal, etc.

0643 Trace Water Sensor

J. B. Stephens, M. M. Yang, E. G. Laue
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 14 Jan 83, patented 30 Apr 85 6p
PATENT-4 514 178 Available from Comm. of Patents

A solid electrolytic type hygrometer is described, which operates with high reliability while providing rapid and sensitive response. A gold foil electrode is wrapped about a hollow glass cylinder, a sheet of hydroscopic-electrolytic material is wrapped about the foil, and a wire is wound around the outside of the electrolytic sheet. Moisture passing between wire turns can be absorbed by the electrolytic material, and then dissociated by current passed by the electrodes through the electrolytic material. The cylinder has a slit extending along its length, to allow resilient expansion to press the sheet of electrolytic material firmly against the electrodes. The wire turns lie against one another to cause rapid dissociation of moisture throughout the electrolytic material. Additional guard wires lie at opposite ends of the electrolytic sheet, and currents pass through them to avoid moisture buildup at the ends of the main wire coil.

0644 Transceiver Test Device

W. H. DeBany
Department of the Air Force, Washington, DC
Filed 2 Oct 84 30p
PAT-APPL-6-657 092 Available from NTIS: price code A03

A device for testing the digital waveforms in a special purpose multi-channel transceiver system designed to operate in a tactical environment. As selected waveforms are presented to the test device, they are randomized over a fixed time period creating a unique signature for comparison with a prestored signature at the end of the period. Uniquely assigned light emitting diodes identify which, if any, of the sequentially examined waveforms are incorrect. Provisions are included for latching the light emitting diodes in their illuminated state in order to detect non-recurrent fault conditions.

0645 Transducer Hydrophone with Filled Reservoir

G. R. Harris, A. S. De Reggi
Department of Health and Human Services, Washington, DC
Filed 23 Oct 84 16p
PAT-APPL-6-663 969 Available from NTIS: price code A02

A hydrophone device with one or more very small active spots located on a large continuous ferroelectric sheet, such as PVDF, overcomes many of th e problems in prior art constructions associated with the high dielectric constant of various media in which the device is used. Additional improvements include increased signal to noise ratio and a sensitivity independent of the medium properties. The hydrophone device includes a piezoelectrically active sheet stretched and clamped on over the top of a hoop ring. A backing is attached to the back of the hoop ring. A low-dielectric material fills the space between the backing and the sheet. This material eliminates the capacitive loading effect which would otherwise be presented by the medium being probed.

0646 Turbulence Measurement Interferometer Apparatus

J. M. Geary
Department of the Air Force, Washington, DC
Filed 23 Sep 82, patented 14 Aug 84 6p
PATENT-4 465 372 Available from Comm. of Patents

Turbulence measurement interferometer apparatus includes a station having an entrance pupil and an aerodynamically stable boom connected to the station. The station houses an optical mirror arrangement defining an optical axis which extends through the entrance pupil. The boom has an end point spaced from the station but disposed on the optical axis. A laser generates a low power beam which is split into first and second portions. The first portion is guided to the boom end point and launched therefrom as a spherical wavefront through turbulence in front of the entrance pupil and toward the mirror arrangement, which in turn transforms it into an object collimated wavefront. The second portion of the beam is transformed into a second collimated reference wavefront which is combined with the first collimated wavefront and produces an interference pattern which is recorded on a medium, such as a photographic plate. The interference pattern provides information on the turbulence structure present at the entrance pupil of the station.

0647 Two-Axis, Self-Nulling Skin Friction Balance

P. Tcheng, F. H. Supplee
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 28 Feb 85 9p
PAT-APPL-6-706 681 Available from NTIS: price code A02

A skin friction force measuring device is described which is comprised of a first pivoted L shaped arm, a second arm pivoted on one end of the L shaped arm with a sensing element attached to an end of the second arm. In response to skin friction forces on the sensing element the arms are pivoted about the two pivots and two nulling means force the pivots back to their zero position. The outputs of the two nulling means are indicative of the skin friction forces along two perpendicular axes in the plane of the sensing element.

0648 Ultrasonic Shear Wave Couplant

D. S. Kupperman, R. N. Lanham
Department of Energy, Washington, DC
Filed 11 Apr 84 8p
PAT-APPL-6-599 108 Available from NTIS: price code A02

Ultrasonically testing of an article at high temperatures is accomplished by the use of a compact layer of a dry ceramic powder as a couplant in a method which involves providing an ultrasonic transducer as a probe capable of transmitting shear waves, coupling the probe to the article through a thin compact layer of a dry ceramic powder, propagating a shear wave from the probe through the ceramic powder and into the article to develop echo signals, and analyzing the echo signals to determine at least one physical characteristic of the article.

0649 Variable Length and Sensor Spacing Thermistor Array,
R. C. Swenson
Department of the Navy, Washington, DC
Filed 22 Feb 84 6p
PAT-APPL-6-582 238 Available from NTIS: price code A02
An adaptable thermistor array of variable length and sensor spacing. A plurality of thermistor modules are attached at any desired interval to a braided line. Each thermistor module contains its own power source, sensor, and an acoustic telemetry transmitter to transmit the temperature related data from the module to an acoustic receiver in a buoy from which the line depends.

0650 Variable Temperature Trap
C. Clavell
Department of the Navy, Washington, DC
Filed 21 Jun 85 10p
PAT-APPL-6-747 220 Available from NTIS: price code A02
Heretofore, arriving at reliable figures for determination of organotin compound concentrations has been hampered due to the lack of a suitable device for trapping the compounds and making an analysis or detection of their presence and concentration. This has been particularly true in the case of seawater analysis where some of the organotin compounds have been leached into seawater from various anti-fouling coatings. The present invention is directed to providing an apparatus responsive to an external control for enabling a precise analysis of organotins in a gas sample by a detector. An elongate glass tube containing a small amount of granular absorbent material held between quartz fiber plugs is coupled to receive the gas sample and concentrate the organotins as well as being coupled to the detector for subsequent elution. An elongated temperature probe coaxially extends through the longitudinal chamber and into the absorbent material to provide an indication of temperature to the external control. A liquid nitrogen container is shaped to contain the portion of the elongated tube having the longitudinal chamber to lower the chamber's temperature below the temperature required for concentrating the organotins. A helically wound coil about the outside of the elongated tube heats the longitudinal chamber so that at discrete temperature levels a separation is effected and the organotins of interest are eluted from the chamber to the detector thereby allowing a precise analysis of the organotins of interest.

0651 Vibration-Free Raman Doppler Velocimeter
R. J. Exton
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 25 Apr 85 15p
PAT-APPL-6-727 034 Available from NTIS: price code A02
A method and apparatus unaffected by vibrational environments for obtaining measurements using Raman Doppler Velocimetry is described. Two laser beams, a pump beam and a probe beam, are focused by a lens to a point in a flow. A lens collimates the two beams. A beam splitter dumps beam and the other beam is reflected by a corner cube back to lens. The other lens then focuses the beam back to the point. The reflected beam and the backward and forward scattering at the point are detected by a detector and processed by a boxcar averager. The lens and corner cube combination, called a retrometer ensure that the measurements are unaffected by vibrations.

0652 Volumetric Fuel Quantity Gauge
H. D. Garner, W. E. Howell
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 23 Aug 84 11p
PAT-APPL-6-643 523 Available from NTIS: price code A02
A method and apparatus to determine the volume of fuel remaining in a reser voir regardless of the attitude, shape, or agitation of the fuel is described. The pressure in the reservoir is continuously cycled between two preselected pressure levels as determined by a pressure sensitive switch. The time required to effect the pressure change between the preselected levels is measured by a timer apparatus and is indicative of the volume of fuel remaining in the reservoir.

MACHINERY & TOOLS

0653 Adjustment Structure
E. J. Rozniecki
Department of the Army, Washington, DC
Filed 9 Nov 84 10p
PAT-APPL-6-669 911 Available from NTIS: price code A02
An adjustment mechanism is described for adjusting the relative position of at least two parts. A first movable member has two bores formed therein with a frusto-conical portion formed at one end of the bores. A second fixed member has a pair of threaded apertures formed therein. The apertures in the fixed member have a distance between their axes less than the distance between the axes of the bores. Threaded cams are disposed within the bores and apertures to that rotation of the threaded cams caused an adjustment force to be applied to the movable member.

0654 Alignment and Assembly Tool for Very Large Diameter Cylinders
J. H. Ehl
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 31 May 85 18p
PAT-APPL-6-739 788 Available from NTIS: price code A02
A tool used to accurately align and hold very large diameter cylinders together for weld assembly is described. The tool has a U-shaped main body with a horizontal top section and two legs, which are attached to the end of top section and extend outward and downward. Horizontal bottom sections extend outward from the bottoms of legs. The tool has one inner jackscrew and one outer jackscrew on each side of its center, extending downward from top section. Each of the two bottom sections has an attached side clamp for clamping the alignment tool to two opposing skin stringers of cylinders. The jackscrews are adjusted to bring the edges of the ring into precise alignment with the ends of the two large cylinders and so that both joints may be welded around their full circumference.

0655 Apparatus for Retrieving, Placing, and Stocking Trays from an Automatic Storage and Retrieval Carousel
H. A. Reuter
Department of the Air Force, Washington, DC
Filed 11 Sep 84 12p
PAT-APPL-6-649 454 Available from NTIS: price code A02

This patent application relates to manipulators for use in automated assembly lines, and more particularly, to an apparatus for retrieving, placing, and stocking trays from an automatic storage and retrieval carousel. Disclosed is material moving and transfer manipulator comprising a rotating turntable having two parallel tracks defined on the horizontal surface of the turntable, with one track on each side of the center. The turntable can be rotated and positioned at 0 degree and 180 degree. Each track is furnished with a tray gripping/driving device which is used to retrieve and insert trays into a compartment of a carousel or onto an indexing table. Vertical displacement of the turntable is achieved by means of an elevator.

0656 Apparatus Producing Constant Cable Tension for Intermittent Demand

T. Lauritzen
Department of Energy, Washington, DC
Filed 23 May 84 26p
PAT-APPL-6-612 955 Available from NTIS: price code A03

This invention relates to apparatus for producing constant tension in cable or the like when it is unreeled and reeled from a drum or spool under conditions of intermittent demand. The invention is particularly applicable to the handling of superconductive cable, but the invention is also applicable to the unreeling and reeling of other strands, such as electrical cable, wire, cord, other cables, fish line, wrapping paper and numerous other materials.

0657 Automatic Hide Processing Apparatus

W. K. Heiland
Department of Agriculture, Washington, DC
Filed 23 Dec 81, patented 23 Oct 84 11p
PATENT-4 478 328 Available from Comm. of Patents

An apparatus for loading cattlehides and like materials automatically onto carrier bars.

0658 Cable Stripping Apparatus

J. Ishmael
Department of the Army, Washington, DC
Filed 9 Aug 85 14p
PAT-APPL-6-763 860 Available from NTIS: price code A02

This tool permits rapid and easy stripping of the outer insulation from co-axial cables or the like. The end of the cable to be stripped is first inserted into a gauging hole in a block of insulating material. A pair of blade-shaped electrical heating elements are clamped against opposite sides of the cable at the mouth of the hole and the cable rotated to form a thermal circumferential cut in the outer insulation. The cable end is then placed in another jig with a V-shaped groove therein and a blade-shaped heating element at the bottom of the groove. A second similar heating element is arranged above the groove and the cable. These two heating elements produce diametrically opposed longitudinal cuts in the insulation, after which two pieces of the insulation can be easily removed.

0659 Cargo Handling System

M. S. Traister
Department of the Air Force, Washington, DC
Filed 10 Oct 84 25p
PAT-APPL-6-659 484 Available from NTIS: price code A02

This patent application discloses a cargo handling system having three major components: (1) a plurality of loading jack assemblies, (2) a plurality of stationary jack assemblies, and (3) a tow bar. The loading jack assemblies are of a novel construction so as to be removably mounted upon a cargo to be loaded or unloaded from the cargo bay of an aircraft or if desired onto a flat bed trailer truck. During the loading and unloading procedure a plurality of uniquely constructed stationary jack assemblies are used in conjunction with the loading jack assemblies so as to aid in the loading and unloading operation. By use of the combination of removable loading jack assemblies and stationary jack assemblies, cargo can be quickly loaded and unloaded into and from a minimum of space.

0660 Compact Brake Structure

E. F'Geppert
Department of the Army, Washington, DC
Filed 22 Jan 85 7p
PAT-APPL-6-692 955 Available from NTIS: price code A02

In one aspect, this patent application related to brake system. In a further aspect, this invention relates to braking systems for use with rotating shafts. A wide variety of various braking structures have been proposed. Examples include clutch packs with discs having one set of discs attached to a housing and a second interleaved set of discs attached to a rotating shaft, so that the discs can be forced together to stop the shafts rotation. Another suitable brake structure is a drum brake structure with shoes mounted on the rotating shaft which can be expanded to contact the drum and stop the shaft. The prior art systems in their various embodiments have proved useful. Such systems are particularly good in environments where a large brake structure can be mounted. However, for some applications, a small brake with a high effective braking force would be desirable. This invention has a driven rotary shaft mounted within a housing which is rigidly affixed to a base number. A plurality of annular U-shaped braking members are disposed within the housing and coaxially about the rotatary shaft. A force applicator is associated with the braking members and can apply an axial force to deform them. The axial force causes a deformation in the braking members which brings a portion of the outer edge of the braking members into contact with the interior of the housing. The inner portions of the braking members are simultaneously brought into contact with the outer surface of the shaft to apply a braking force.

0661 Contact Insertion and Wire Lay Robotic End Effector Apparatus

C. M. Travlos
Department of the Air Force, Washington, DC
Filed 16 May 84 17p
PAT-APPL-6-610 913 Available from NTIS: price code A02

This abstract describes insertion and wire lay apparatus for manufacture of wire harnesses which provides for insertion of a contact affixed to the trailing end of a wire segment after wire lay. The invention provides for gripping a wire segment while the segment is caused to lay in a desired configuration. Thereafter, a set of tip jaws enables a trailing end contact to be inserted into a selected contact holding device. This operation may be prefaced, prior to wire lay, by insertion into another contact holding device of a contact affixed to the leading end of the wire segment, by means as another set of tip jaws. The apparatus is arranged to facilitiate lateral receipt and rejection of wire segments.

0662 Containerless High Purity Pulling Process and Apparatus for Glass Fibers
R. J. Naumann, E. C. Ethridge
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 19 Apr 84 13p
PAT-APPL-6-601 130 Available from NTIS: price code A02
An apparatus and method for pulling optical glass fibers in a containerless environment is disclosed which includes a single axis acoustic levitation furnace in which a specimen is levitated and melted. A reflector unit is carried in the interior of the furnace and includes a reflector disposed centrally about the acoustic axis of the levitator. A fiber pulling bore is formed centrally in the reflector unit surrounded by cooling jacket to enhance solidification and formation of a fiber. A starting fiber strand is introduced into the melt and pulled outwardly through the bore whereby the specimen fiber is started and formed as pulled therethrough. A movable secondary reflector is provided which captures a supplemental specimen pellet and transfer it to the melt.

Deep Submergence Vehicle (DSV) Lightweight Cable Cutter,
See 0729

0663 Double Pinch-Push Contact Insertion End-Effector
M. Weixel
Department of the Air Force, Washington, DC
Filed 27 Nov 84 14p
PAT-APPL-6-675 173 Available from NTIS: price code A02
This invention relates to robotic assembly of wire harnesses, and, more particularly, to a contact-independent double pinch-push contact insertion end-effector for use in wire harness assembly. The end-effector comprises a front jaw assembly which is moveable relative to a rear jaw assembly. Each jaw assembly comprises a pair of jaws, where each pair is individually actuable to effect contact insertion.

0664 Electronic Module Insertion and Retraction Mechanism
J. J. Chino
Department of the Navy, Washington, DC
Filed 20 Jun 84 13p
PAT-APPL-6-622 370 Available from NTIS: price code A02
A mechanism for inserting and aligning electronic modules, especially in dense configurations, is provided with removable ring means whereby the module assemblies may be automatically retracted. The removable ring means is installed near the threaded end of each mounting shaft. When a shaft is unscrewed from the chassis the ring means bears against a shoulder formed in the end-portion of the module assembly heat sink frame, thereby providing a lifting force on the module assembly. The ring means is easily installed or removed through an opening in the side of the end-portion.

0665 Fast Shutter Apparatus
E. L. Zimmermann, D. R. Kania
Department of Energy, Washington, DC
Filed 27 Jun 84 10p
PAT-APPL-6-625 322 Available from NTIS: price code A02
An apparatus for protecting diagnostic equipment from blast damage by rapidly interposing a shutter between the equipment and the blast area. The apparatus comprises a sensor for sensing a trigger signal associated with the blast and for converting it into a voltage pulse. The voltage pulse is received by the first end of a firing pin. A pressure chamber holds a gas under pressure. The second end of the firing pin is located inside the pressure chamber and is located above a foil member covering an orifice. When the voltage pulse reaches the second end, a point-to-plane discharge ruptures the foil, allowing the gas to enter a drive housing and quickly move a drive piston away from the foil. A drive rod connects the drive piston to a shutter and as the drive piston is moved down, the shutter moves into a closed position, protecting the equipment from debris.

0666 Fluidizing Device for Solid Particulates
J. P. Diebold, J. W. Scahill
Department of Energy, Washington, DC
Filed 27 Jun 84 19p
PAT-APPL-6-625 327 Available from NTIS: price code A02
A flexible whip or a system of whips with novel attachments is suspended in a hopper and is caused to impact against fibrous and irregularly shaped particulates in the hopper to fluidize the particulates and facilitate the flow of the particulates through the hopper. The invention provides for the flow of particulates at a substantially constant mass flow rate and uses a minimum of energy.

0667 Gas Shielding Apparatus
D. Brandt
Department of Energy, Washington, DC
Filed 5 Jun 84 11p
PAT-APPL-6-617 652 Available from NTIS: price code A02
An apparatus for preventing oxidation by uniformly distributing inert shielding gas over the weld area of workpieces such as pipes being welded together. The apparatus comprises a chamber and a gas introduction element. The chamber has an annular top wall, an annular bottom wall, an inner side wall and an outer side wall connecting the top and bottom walls. One side wall is a screen and the other has a portion defining an orifice. The gas introduction element has a portion which encloses the orifice and can be one or more pipes. The gas introduction element is in fluid communication with the chamber and introduces inert shielding gas into the chamber. The inert gas leaves the chamber through the screen side wall and is dispersed evenly over the weld area.

0668 In-Situ Annular Face Grinder
B. D. Sears, J. F. Wilger, J. R. Cazinha, D. J. Reames, G. G. Holland
Department of the Navy, Washington, DC
Filed 9 Apr 84 13p
PAT-APPL-6-597 966 Available from NTIS: price code A02
A machine is provided for grinding the top surface of an annular body. The machine includes a block which is receivable within the annulus of the body. The top of the block has a central hole. A plurality of rods slidably extend transversely through the block with a first end of each rod extendable into the hole and a second end of each rod extendable from a side of the block opposite the inside curved surface of the annular body. A plurality of arcuate pads are provided wherein each pad has an arc which conforms to the curve of the inside of the annular body. Each pad is connected to a respective second end of each rod. A bolt is threaded into the central hole of the block, the bolt having a bottom tapered portion for engaging the first

ends of the rods so that when the bolt is threaded into the block the rods will be forced outwardly to engage the arcuate pads with the inside curved surface of the annular body. A turntable is slidably mounted on the top of the block. A grinding device is mounted on the turntable and has a downwardly facing grinding surface for engaging the top surface of the annular body. A device is provided for moving the grinding surface toward and away from the top surface of the body.

0669 Ingot Slicing Machine and Method
Y. S. Kuo
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 11 Jun 82, patented 9 Oct 84 13p
PATENT-4 475 527 Available from Comm. of Patents
An improved method for simultaneously slicing one or a multiplicity of boules of silicon into silicon wafers is described. A plurality of vertical stacks of horizontal saw blades of circular configuration are arranged in juxtaposed coaxial alignment. Each blade is characterized by having a cutting diameter slightly greater than the cutting diameter of the blade arranged immediately above, imparting a simultaneous rotation to the blades.

0670 Linear Magnetic Bearings
M. P. Goldowskiy
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 8 Sep 82, patented 25 Sep 84 12p
PATENT-4 473 259 Available from Comm. of Patents
A self regulating, nonfrictional, active magnetic bearing is disclosed which has an elongated cylindrical housing for containing a shaft type armature with quadrature positioned shaft position sensors and equidistantly positioned electromagnets located at one end of the housing. Each set of sensors is responsive to orthogonal displacement of the armature and is used to generate control signals to energize the electromagnets to center the armature. A bumper magnet assembly is located at one end of the housing for dampening any undesired axial movement of the armature or to axially move the armature either continuously or fixedly.

0671 Machine with an Intermittently Rotating Table for the Performance of Work Operations
M. Gippa
Department of the Air Force, Washington, DC
Filed 28 Dec 82, patented 18 Jun 85 8p
PATENT-4 523 359 Available from Comm. of Patents
A machine has an intermittently rotating table for holding parts to be worked on or assembled. Operating units (20,21,25) are actuable either simultaneously for all units or groups of units, or independently of one another. The operating units can be mounted vertically over or under the table and also laterally and can receive the rotary movement of a central wheel or independent motors. According to a perfect embodiment, the control of the feed is effected by the central shaft (4). During a work cycle, this shaft makes a vertical movement and transmits that movement to the operating units (20,21) by radial linear cams (16,17,etc.) i.e., feed and return occur during a single movement of the shaft (4), for example, downward. During idle time, i.e., the time used to move and index the table (8) but not to perform the work, the central shaft (4) is also turned through a certain angle so that the linear cams are no longer in contact with the operating units and in this position the central shaft is returned without influencing the operating units. Thus it is possible to give the operating units any feed and return characteristic of machines with rotary cams, while having very much simplified kinematics.

0672 Mask Aligner for Solar Cell Fabrication
D. K. Hufford
Department of the Air Force, Washington, DC
Filed 16 May 84 11p
PAT-APPL-6-610 911 Available from NTIS: price code A02
A novel method and device for accurately aligning a substrate comprising a silicon wafer in the fabrication of a silicon vertical junction solar cell are described which comprise a base plate having a recess therein defining an opening for snugly receiving the wafer, the recess including a substantially straight portion for mating with a cleaved edge of known crystallographic orientation provided on the wafer, and a mask plate for covering the base plate and wafer, the mask including a pattern in predetermined configuration through which the wafer may be exposed in the fabrication process for the solar cell.

Method and Apparatus for Measuring Press Roll Clearance
See 0581

Microwave Drying of Ammonium Perchlorate Grinding Spheres
See 0718

0673 Multi-Directional Straddle-Lift Carrier
S. R. Petoia
Department of the Navy, Washington, DC
Filed 2 Nov 83 20p
PAT-APPL-6-548 047 Available from NTIS: price code A02
A straddle-lift carrier for transporting long heavy loads, having adjustable width for accommodating various size loads and for compacting the carrier for storage. The adjustable width allows the carrier to negotiate relatively narrow passages. A high degree of maneuverability is achieved by utilization of independently driven and steered traction wheels. Raising and lowering of loads is accomplished by hydraulically operated forklift mechanisms disposed on either side of the carrier. Operation of the carrier is controlled by means of a handheld remote control unit.

0674 Multistage Spent Particle Collector and a Method for Making Same
B. T. Ebihara
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 30 Sep 83, patented 2 Jul 85 7p
PATENT-4 527 092 Available from Comm. of Patents
A description is given of a spent particle collector which maintains structural integrity when raised to a high temperature although constructed of materials having widely different coefficients of expansion. The collector is comprised of one or more axisymmetric stages, each stage comprising a subassembly. A subassembly includes an inner pyrolytic graphite ring, a transition ring, a ceramic insulator ring and an outer metal ring which forms part of the wall of the collector. Each transition is of a ductile metal having high thermal conductivity and is provided with an annular sputter shield wall extending toward the source of spent particles and, where necessary, a trough in the other surface to enclose the sputter shield of the next adjacent transition ring. A plurality of radial extending slots are provided in a transi-

tion ring to form segments which are retained in their position by the sputter shield.

0675 Non-Backdriveable Free Wheeling Coupling
W. R. Llewellin
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 22 Apr 85 11p
PAT-APPL-6-725 689 Available from NTIS: price code A02
A rotary coupling for connecting a driven part to a source of rotary force is described. This device transmits rotary force in one direction only and disengages to permit the driven part to free wheel when the input member is stopped and precludes the backdriving of rotary force from output member to input member. The coupling includes an input member having a splined shaft, a coupling member connected to the splined shaft, and a co-axial output member. The coupling member and the output member having complementary sets of axially facing clutch teeth. Guides in the form of helical grooves on the coupling member and spring loaded followers acting with the guides affect them engagement and disengagement of the clutch teeth by moving the coupling member toward and away from output member, the followers and guides themselves disengaging to permit free wheeling of output member when input member is stopped.

0676 Nozzle for Self-Contained Cutting Torches
P. W. Proctor, R. L. Dow
Department of the Navy, Washington, DC
Filed 17 Jun 85 16p
PAT-APPL-6-745 738 Available from NTIS: price code A02
A self contained jet perforator torch (10) for defining large holes (H) in a workpiece (W) such as a large bomb, includes a plurality of ports (68) fluidically ocnnecting a combustion chamber with a slot-like chamber (62). The ports and the slot-like chamber extend at and angle with respect to the longitudinal centerline of the torch whereby fluid exiting the torch contacts a workpiece at an angle (I) with a normal (N) extending from the workpiece.

0677 One-Step Loading Adapter
D. R. Foss
Department of the Air Force, Washington, DC
Filed 3 Jul 85 15p
PAT-APPL-6-751 400 Available from NTIS: price code A02
A one-step loading adapter is attached to a lifting truck. The adapter is able to transport and position a store such as a missile from a storage lo cation to an aircraft wing for mounting thereto without transfer to another device. The adapter has a removable boom assembly for lifting and lowering the store as desired. An adjustable cradle having three degrees of freedom is able to position the store for mounting one the store is loaded thereon.

0678 Portable Cutting Apparatus
R. F. Gilmore
Department of Energy, Washington, DC
Filed 17 Jul 84 19p
PAT-APPL-6-631 697 Available from NTIS: price code A02
A remotely operable, portable cutting apparatus detachably secured to the workpiece by laterally spaced clamp assemblies engagable with the workpiece on opposite sides of the intended line of cut. A reciprocal cutter head is mounted between the clamp assemblies and is provided with a traveling abrasive cutting wire adapted to sever the workpiece normal to the longitudinal axis thereof. Dust and debris are withdrawn from the cutting area by a vacuum force through a nozzle mounted on the cutting head.

0679 Precise Bearing Support Ditherer
G. L. Assard, A. L. Moorcroft
Department of the Navy, Washington, DC
Filed 4 Jun 84 14p
PAT-APPL-6-617 049 Available from NTIS: price code A02
The present invention relates to a device for improving the readout accuracy of precision measuring instruments and more particularly to a bearing support ditherer which acts to replace static bearing friction with the corresponding lower value of dynamic friction by selectively vibrating the bearing mount so as to produce a random or pseudo-random rotary planar motion of the bearing.

0680 Precise Bearing Support Ditherer with Piezoelectric Drive Means
G. L. Assard, A. L. Moorcroft
Department of the Navy, Washington, DC
Filed 4 Jun 84, patented 11 Jun 85 6p
PATENT-4 523 120 Available from Comm. of Patents
A relatively solid mounting surface, which may be part of a leveling gimbal, supports a piezoelectric bearing mount which has the properties of an acoustic transducer. The transducer has electrodes thereon which are powered from multi-phase electrical sources causing the bearing mount, and a bearing jewel which is rigid therewith, to move so as to dither the jewel in a rotary or other preselected fashion, thereby reducing bearing friction. Bandwidth, level and phasing sequence of the power sources are adjustable permitting optimized average dynamic motion and corresponding increased readout accuracy.

0681 Precision Manipulator Heating and Cooling Apparatus for Use in UHV (Ultrahigh Vacuum) Systems with Sample Transfer Capability
R. A. Outlaw, B. T. Baugh
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 31 Oct 83, patented 14 May 85 6p
PATENT-4 516 435 Available from Comm. of Patents
An improvement of a precision manipulator for use in ultrahigh vacuum (UHV) system with sample transfer capability in which a spring loaded thermocouple and a heater electrode are both in direct contact with the transferred sample is discussed. The thermocouple and heater electrode assembly are mounted concentric with a sample receiving block on the end of an offset manipulator. Hence, when a sample is transferred from an introduction chamber into the UHV chamber, it contacts the spring loaded thermocouple and then seats a heater electrode. Cooling by a copper plate and a strap combined with the resistance heating capability allow sample temperatures over the range of 150 to 1750 K while positioned in front of any diagnostic instrument in the UHV system and while taking data with these instruments.

0682 Printed Wiring Board Circuit Isolator Tool
R. D. Huxsol
Department of the Air Force, Washington, DC
Filed 6 Feb 85 8p
PAT-APPL-6-698 726 Available from NTIS: price code A02

A tool for isolating a printed circuit wiring trace from a component pin, said tool having a rotatable shank with an internal cavity and external cutting flutes formed on an end thereof. The end of the tool is pushed over the exposed end of the pin such that the cutting flutes bear against the solder material which bridges the gap between the printed wiring trace and the component pin. The tool is then rotated to remove the solder bridge and any underlying wiring trace material to isolate the wiring trace and pin from each other.

0683 Robotic Order Picking
H. A. Reuter
Department of the Air Force, Washington, DC
Filed 5 Apr 85 21p
PAT-APPL-6-720 126 Available from NTIS: price code A02
A method of filling a kit with required parts automatically. The parts are stored in an automatic storage and retrieval apparatus. The parts are held in a container stored in trays in the automatic storage and retrieval apparatus, On demand, a tray is placed at a transfer location whereat rrobot means removes the selected container, transports the selected container, opens the selected container over a kit box wherein the parts fall from the opened selected container, closes the selected container and returns it to the transfer location where the above apparatus replaces it in the storage area until another demand. The above continues until all parts are placed in the kit box.

0684 Rotating Tool Wear Monitoring Apparatus
K. W. Yee, D. S. Blomquist
Department of Commerce, Washington, DC
Filed 2 Apr 82, patented 11 Sep 84 9p
PATENT-4 471 444 Available from Comm. of Patents
A system is provided for predicting when the failure of a rotating machine tool or part is imminent or when a tool is worn. The system includes a transducer for producing an output related to the workpiece vibrations caused by the machine tool and an analog comparator which compares this output with a threshold signal related to the normal operation of the tool and established by a microcomputer which determines whether further signals which exceed the threshold are produced during each of a predetermined number of subsequent time intervals related to the rotational speed of the tool. If so, a 'failure' signal is produced which may be used, for example, to cause retraction of the tool.

0685 Self-Locking Mechanical Center Joint
H. G. Bush, R. E. Wallsom
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 11 Jun 82, patented 21 May 85 10p
PATENT-4 518 277 Available from Comm. of Patents
A device for connecting, rotating and locking together a pair of structural half columns is described. The device is composed of an identical pair of cylindrical hub assemblies connected at their inner faces by a spring loaded hinge; each hub assembly having a structural half column attached to its outer end. Each hub assembly has a spring loading locking ring member movably attached adjacent to its inner face and includes a latch member for holding the locking ring in a rotated position subject to the force of its spring. Each hub assembly also has a hammer member for releasing the latch on the opposing hub assembly when the hub assemblies are rotated together. The spring loaded hinge connecting the hub assemblies rotates the hub assemblies and attached structural half columns together bringing the inner faces of the opposing hub assemblies into contact with one another.

0686 Solar Cell Coverslide Extraction Method and Apparatus
C. R. Velley
Department of the Air Force, Washington, DC
Filed 13 Jun 84 12p
PAT-APPL-6-620 212 Available from NTIS: price code A02
Apparatus is described for extracting a coverslide from a solar cell includes a receptacle defining a cavity in which a rack is disposed which mounts a plurality of partitions in spaced, side-by-side relationship. The partitions define a plurality of extraction chambers there between which are open at their opposite ends. A screen is disposed below and underlies the rack for retaining solar cell modules received within the chambers in upright standing positions therein. The cavity is almost filled with a liquid solvent capable of detaching the coverslide of each module from its solar cell. A stirring device disposed below the rack on the bottom of the cavity can be actuated to create flow of the solvent along a circulatory path upwardly through some of the chambers and downwardly through other of the chambers and generally parallel to a plane of attachment of the coverslide to the solar cell of each module in the chambers. Also, air is bubbled through the chambers so as to assist the solvent in detaching the coverslides from the solar cells.

0687 Spray Applicator for Spraying Coatings and Other Fluids in Space
J. F. Kuminecz, M. F. Lausten
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 25 Jun 82, patented 28 May 85 7p
PATENT-4 519 545 Available from Comm. of Patents
A self contained spray application is developed for one handed operation in a zero gravity vacuum environment by a free flying astronaut not attached to any spacecraft. This spray applicator eliminates contamination of the operator by back spray. This applicator includes a rigid accumulator containment of a fluid within a flexible bladder the fluid being urged out of the accumulator under pressure through a spray gun. The spray gun includes a spring loaded lockable trigger which controls a valve. When in an open position, the fluid passes through the valve into the ambient environment in the form of a spray. A spray shield is provided which directs the flow of the spray from the applicator by trapping errant particles of spray yet allowing the passage of escaping gases through its material.

0688 Telescoping Low Vibration Pulling Mechanism for Czochralski Crystal Growth
G. W. Iseler
Department of the Air Force, Washington, DC
Filed 26 Feb 85 12p
PAT-APPL-6-705 816 Available from NTIS: price code A02
A telescoping low vibration pulling mechanism is described for use in Czochralski crystal growth apparatus, comprising a broached brushing which defines an internal circumference of teeth on the circumference of a splined shaft. The brushing is coupled to the means for rotation via a hollow tube and the splined shaft, couplable to a seed shaft, and an elevation means telescopes through said brushing within said hollow tube.

0689 Termination Load Carrying Device
J. N. Tervo
Department of the Air Force, Washington, DC
Filed 19 Jun 85 11p
PAT-APPL-6-746 617 Available from NTIS: price code A02
A follower nut assembly is attached to a load carrying nut all of which is threaded onto a ball screw of a drive actuator. The actuator drive causes a load attached to said load carrying nut to be translated to a fully extended position. At about the fully extended position, a run-off end without threads of the ball screw is positioned in the load carrying nut. This causes the translating force to be fully applied to a follower nut which is normally shear pinned to the load carrying nut. Because of the inertia of the load, the follower nut shears the pin and then rotates within a cage of the follower nut assembly. The translation of the load stops when the shear pin is broken. A thrust bearing is positioned between the follower nut and the load carrying nut to provide the necessary support when the load is fully extended.

0690 Variable Force, Eddy-Current or Magnetic Damper
R. E. Cunningham
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 3 Feb 83, patented 14 May 85 6p
PATENT-4 517 505 Available from Comm. of Patents
An object of the invention is to provide variable damping for resonant vibrations which may occur at different rotational speeds in the range of rpms in which a rotating machine is operated. A variable force damper in accordance with the invention includes a rotating mass carried on a shaft which is supported by a bearing in a resilient cage. The cage is attached to a support plate whose rim extends into an annular groove in a housing. Variable damping is effected by tabs of electrically conducting nonmagnetic material which extend radially from the cage. The tabs at an index position lie between the pole face of respective C shaped magnets. The magnets are attached by cantilever spring members to the housing.

0691 Variable Radius Lead Former
R. L. Zahn
Department of the Air Force, Washington, DC
Filed 28 Dec 83, patented 7 May 85 5p
PATENT-4 515 001 Available from Comm. of Patents
A variable radius lead former operates and axial lead electronic component wherein the bend radius may be adjusted to any desired radius within specifications.

0692 Very High Speed Lap with Negative Lift Effect
R. K. Lee
Department of the Air Force, Washington, DC
Filed 8 Apr 85 15p
PAT-APPL-6-720 936 Available from NTIS: price code A02
This patent application discloses a rotary lapping system which contains a construction and mounting of grinding pads (called tesserae) which act to produce a negative lift or suction through hydrodynamic action with an abrasive slurry liquid. The rotary lapping system uses a plurality of negative lift tools, each of which is composed of a square base of metal, a rubber sheet bonded to the base and four brass tessera bonded to the rubber sheet. Each tessera has a plurality of equally spaced, parallel grooves forming the grinding surface and the four tesserae are bonded to the rubber sheet to leave a relatively wide space, or slot, between each of the tessera. Four negative lift tools are attached around the outer edge of a metal ring, equally spaced, and the metal ring is bonded to a rubber ring which is bonded to the base of a power driven dish-like member for holding a grinding slurry to be fed to the grinding surfaces. The tessera construction causes a negative lift, or suction, to produce very strong cutting pressure with more rapid material removal without distortion of, or harm to the workpiece. The negative lift is the result of the particular mounting of the tesserae, which cause the tesserae at the leading edge of the rubber sheet to present a negative angle of attack to the abrasive slurry liquid during rotation.

0693 Very High Speed Lap with Positive Lift Effect
R. K. Lee
Department of the Air Force, Washington, DC
Filed 8 Apr 85 15p
PAT-APPL-6-720 937 Available from NTIS: price code A02
This patent application discloses a rotary lapping system for grinding a workpiece in an abrasive slurry liquid and producing a positive lift in the abrasive slurry liquid. The positive lift is the result of the particular mounting of the grinding pads which causes the leading edge pads to possess a positive angle of attack during rotation in the abrasive slurry liquid. The advantages of a positive lift in the grinding pads includes preventing the grinding tools from digging into the surface of the workpiece during very high speed lap grinding. Trailing edge grinding pads are allowed to produce, in one embodiment, a negative angle of attack which results in a negative lift. The net lift of all grinding pads may be a neutral lift, which allows the entire lap substrate to be tilted and allow working of local areas while the leading edge guiding pads continue to hydroplane over the workpiece surface and avoid tendencies to dig into the surface.

0694 Vibration Isolated Cold Plate Assembly
R. T. Dolbeare
Department of the Air Force, Washington, DC
Filed 31 Oct 84 12p
PAT-APPL-6-666 786 Available from NTIS: price code A02
A vibration isolated cold plate assembly is described having a cold plate cover and a base interconnected together by means of a pair of elongated, rectangular-shaped elements made of elastomeric material. The elongated elements form there between a channel through which a coolant flows in communication with a plurality of cooling fins which are secured only to the undersurface of the cold plate cover. Electronic components are mounted on the upper surface of the cold plate cover and are held thereon in a vibration isolated environment while simultaneously having any excess heat dissipated therefrom.

0695 Vibration Isolator Actuator
R. L. Plante
Department of the Air Force, Washington, DC
Filed 10 Jan 85 14p
PAT-APPL-6-690 438 Available from NTIS: price code A02
A novel actuator for controlling the position of a mirror segment of a segmented mirror assembly and for isolating the segment from vibration is described, which comprises, a moveable control member operatively interconnecting the segment and support structure for the mirror assembly; an actuator assembly, which may comprise an electrically controlled magnet and coil, operatively attached to the control member and responsive to an input signal, for moving the control member to selectively position the mirror segment

relative to the support structure: a force amplifier connected to one or both ends of the control member for amplifying the force exerted on the control member, and which may be in the form of a pair of cooperating fluid filled bellows of different sizes coaxially disposed at one or both ends of the control member so that compression of the smaller bellows communicating with the larger bellows results in an amplification of the force imposed on the control member; a position sensor for sensing the position of the control member and providing a corresponding output signal; and programmable electronics for proce ssing the output signal of the position sensor and providing the input signal to the actuator according to a preprogrammed scheme.

0696 Wet Film Applicator
S. E. Lubniewski, C. Haggenmiller
Department of the Air Force, Washington, DC
Filed 31 Aug 82, patented 16 Oct 84 5p
PATENT-4 476 806 Available from Comm. of Patents
Thi s abstract discloses a manually-operated applicator for use in applying a film of wet material in a preselected, uniform, initial wet film thickness on the top flat surface of a workpiece which is in a level position. The applicator comprises a cylindrical rod having a plurality of equally spaced apart, annularly-shaped protrusions which from contact surfaces with the wet material and with the surface of the workpiece. The protrusions extend from the circumferential surface of the applicator a distance equal to the desired uniform thickness of the wet film. The wet material is manually rolled or pushed or pulled with the applicator by the user until the wet material covers the surface of the workpiece in its entirety, and until the top surface of the wet film is flush and level with the contacting circumferential surface of the applicator.

0697 Wrapping Machine
D. H. Lenker, D. F. Nascimento
Department of Agriculture, Washington, DC
Filed 20 May 82, patented 14 May 85 12p
PATENT-4 516 385 Available from Comm. of Patents
An apparatus for wrapping objects in heat-sealable film which provides for continuous mechanical wrapping of objects and which is suitable for wrapping objects which have poorly-defined shape or which are non-uniform in size or shape is described.

MANUFACTURING PROCESSES

0698 Apparatus for Etching Vertical Junction Solar Cell Wafers
C. R. Valley
Department of the Air Force, Washington, DC
Filed 28 Dec 83, patented 26 Feb 85 3p
PATENT-4 501 636 Available from Comm. of Patents
An apparatus for etching semiconductor wafers which comprises a cylindrical vessel with a lid having associated cooling means, a basket assembly, rack means for holding a plurality of wafers, support means for supporting the basket assembly above the bottom of the vessel, and stirring means.

Arc Spray Fabrication of Metal Matrix Composite Monotape
See 0772

0699 Attachment Method-Ceramic Radome to Metal Body
J. S. Perry
Department of the Air Force, Washington, DC
Filed 19 Apr 83, patented 28 May 85 6p
PATENT-4 520 364 Available from Comm. of Patents
A radome assembly for an airframe and a method for attaching the assembly to an airframe are provided. The radome assembly comprises a ceramic shell with a polymeric transition section bonded thereto, which shell is adapted for mounting to a metal airframe. The transition section has a coefficient of thermal expansion intermediate between that of the ceramic shell and that of the metal airframe. The method of this invention comprises preloading the transition section in circumferential compression when the radome assembly is attached to the airframe.

Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662

0700 Control of Gas Tungsten Arc Welding Pool Shape by Trace Element Addition to the Weld Pool
C. R. Heiple, P. Burgardt
Department of Energy, Washington, DC
Filed 13 Mar 84 24p
PAT-APPL-6-589 256 Available from NTIS: price code A02
An improved process for Gas Tungsten Arc welding maximizes the depth/width ratio of the weld pool by adding a sufficient amount of a surface active element to insure inward fluid flow, resulting in deep, narrow welds. The process is especially useful to eliminate variable weld penetration and shape in GTA welding of steels and stainless steels, particularly by using a sulfur-doped weld wire in a cold wire feed technique.

0701 Electron Beam Enhanced Surface Modification for Making Highly Resolved Structures
J. R. Pitts
Department of Energy, Washington, DC
Filed 10 Oct 84 31p
PAT-APPL-6-659 490 Available from NTIS: price code A03
A method for forming high resolution submicron structures on a substrate is provided by direct writing with a submicron electron beam in a partial pressure of a selected gas phase characterized by the ability to dissociate under the beam into a stable gaseous leaving group and a reactant fragment that combines with the substrate material under beam energy to form at least a surface compound. Variations of the method provide semiconductor device regions on doped silicon substrates, interconnect lines between active sites, three dimensional electronic chip structures, electron beam and optical read mass storage devices that may include color differentiated data areas, and resist areas for use with selective etching techniques.

0702 Epitaxial Thinning Process
C. M. Siegel
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 6 Apr 82, patented 31 Jul 84 8p
PATENT-4 462 871 Available from Comm. of Patents
A method is described for thinning an epitaxial layer of a wafer that is to be used in producing diodes having a specified breakdown voltage and which also facilitates the thinning process. Current is passed through the epitaxial layer, by connecting a current source between the substrate of

the wafer and an electrolyte in which the wafer is immersed. When the wafer is initially immersed, the voltage across the wafer initially drops and then rises at a steep rate. When light is applied to the wafer the voltage drops, and when the light is interrupted the voltage rises again. These changes in voltage, each indicate the breakdown voltage of a Schottky diode that could be prepared from the wafer at that time. The epitaxial layer is thinned by continuing to apply current through the wafer while it is immersed and light is applied, to form an oxide film and when the oxide film is thick the wafer can then be cleaned of oxide and the testing and thinning continued. Uninterrupted thinning can be achieved by first forming an oxide film, and then using an electrolyte that dissolves the oxide about as fast as it is being formed, to limit the thickness of the oxide layer.

0703 High Temperature Acoustic Levitator
M. B. Barmatz
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 26 Aug 83, patented 7 Aug 84 10p
PATENT-4 463 606 Available from Comm. of Patents
A system is described for acoustically levitating an object within a portion of a chamber that is heated to a high temperature, while a driver at the opposite end of the chamber is maintained at a relatively low temperature. The cold end of the chamber is constructed so it can be telescoped to vary the length (L sub 1) of the cold end portion and therefore of the entire chamber, so that the chamber remains resonant to a normal mode frequency, and so that the pressure at the hot end of the chamber is maximized. The precise length of the chamber at any given time, is maintained at an optimum resonant length by a feedback loop. The feedback loop includes an acoustic pressure sensor at the hot end of the chamber, which delivers its output to a control circuit which controls a motor that varies the length (L) of the chamber to a level where the sensed acoustic pressure is a maximum.

0704 Hot Rolling of Ceramics by the Use of Self Propagating Synthesis
R. W. Rice
Department of the Navy, Washington, DC
Filed 19 Oct 84 21p
PAT-APPL-6-662 933 Available from NTIS: price code A02
The present invention relates to the process of hot rolling of ceramics. More specifically, this invention involves the hot rolling of ceramics in conjunction with the self propagation synthesis process. A method for producing high technology ceramics with minimal porosity comprises the following steps: filling a can with a constituent powder of a ceramic; creating a vacuum in the can and maintaining the vacuum throughout the entire process; outgassing the powder in the can by placing a furnace around the area of the can that encloses the powder and heating the furnace to at least 100 C; removing the furnace after a minimum of five minutes of heating; cold rolling the can in a rolling system; igniting the powder so a localized propagation reaction front is created; and hot rolling the can in the rolling system so the propagation reaction front is maintained between the rolls of the rolling system.

0705 Improved Brazing Technique
D. G. Harast
Department of Energy, Washington, DC
Filed 27 Jan 84 7p
PAT-APPL-6-574 504 Available from NTIS: price code A02
A method of brazing comprises sand blasting the surfaces of the components to be brazed with particles of a brazing material to clean the surfaces and to embed brazing material in the surfaces, applying the brazing material to the surfaces, and heating the brazing material to form a brazement between the components.

0706 Improved Silicon Grinding Method and Apparatus
E. R. Collins
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 29 Nov 84 9p
PAT-APPL-6-676 163 Available from NTIS: price code A02
Opposing streams of silicon particles collide to form a collision product, which is repeatedly graded, refined by a series of jet mills and recycled to provide an output containing an improved yield of useful particles.

0707 Ion-Beam Nitriding of Steels
J. Salik, T. E. Hubbell
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 16 Oct 84 12p
PAT-APPL-6-661 481 Available from NTIS: price code A02
A surface of a steel substrate is nitrided by exposing it to a beam of nitrogen ions under a low pressure. The pressure is much lower than that employed for ion-nitriding, and an ion source is used instead of a glow discharge. Both of these feathers reduce the introduction of impurities into the substrate surface.

Low Loss Splicing Method for Single-Mode Optical Fiber
See 1053

0708 Low Noise Polycrystalline Semiconductor Resistors by Hydrogen Passivation
J. Y. Lee
Department of the Air Force, Washington, DC
Filed 24 Apr 85 13p
PAT-APPL-6-726 558 Available from NTIS: price code A02
Low noise polycrystalline silicon resistors are fabricated in the following sequence: 1) deposit an appropriate thickness of polysilicon (e.g. 400nm) on top of an oxidized wafer 2) resistor doping by ion implantation (e.g. phosphorous) 3) heavy doping of the end-contact regions of the polysilicon resistor by high-dose ion implantation 4) patterning the polysilicon resistor 5) oxidation/annealing the pllysilocon resistor 6) open contacts to the polysilicon resistor 7) aluminum metallization to form ohmic contacts 8) a long (e.g. 3 hours) low temperature (e.g. at 375 deg) pure hydorgen annealing to passivate the interface states in the polysilicon resistor. Polyresistors processed this way have a noise figure that is about a factor of three lower than samples processed otherwise. The low temperature post metallization annealing in pure hydrogen passivates the interfaces of polyresistors, reducing the 1/f noise normally generated therein.

0709 Low Temperature Deposition of Nickel Films
A. D. Berry
Department of the Navy, Washington, DC
Filed 12 Sep 83, patented 23 Oct 84 4p
PATENT-4 478 890 Available from Comm. of Patents
This invention relates to a low-temperature, electroless process for the plating of nickel metal upon a substrate. Nickel, olefin, and trifluorophosphine vapors are condensed and reacted in a vessel. The reaction product is distilled off and condensed onto the surface of a substrate. The surface is warmed and the reaction product allowed to decompose, yielding a coating of nickel metal upon the substrate, gaseous olefin and Ni(PF3)4.

0710 LPE (Liquid Phase Epitaxy) Semiconductor Material Transfer Method
F. Z. Hawrylo
Department of the Air Force, Washington, DC
Filed 30 Jul 84 12p
PAT-APPL-6-635 393 Available from NTIS: price code A02
A method for liquid phase epitaxy maskless deposition of a III-V compound on a substrate in a pre-determined pattern includes the steps of contacting a growth wafer having a patterned mask thereon to a growth solution in equilibrium and then increasing the temperature of the growth solution and wafer thereby locally melting the exposed portions of the wafer surface and locally changing the equilibrium properties of the growth solution. The substate upon which the material is to be deposited is then contacted to the growth solution and the temperature lowered. Because of the locally varying equilibrium conditions the constituents of the growth solution will be preferentialy deposited on those portion of the growth wafer.

0711 Method and Apparatus for Casting Conductive and Semi-Conductive Materials
T. F. Ciszek
Department of Energy, Washington, DC
Filed 13 Aug 84 21p
PAT-APPL-6-640 286 Available from NTIS: price code A02
A method and apparatus is disclosed for casting conductive and semiconductive materials. The apparatus includes a plurality of conductive members arranged to define a container-like area having a desired cross-sectional shape. A portion or all of the conductive or semiconductive material which is to be cast is introduced into the container-like area. A means is provided for inducing the flow of an electrical current in each of the conductive members, which currents act collectively to induce a current flow in the material. The induced current flow through the conductive members is in a direction substantially opposite to the induced current flow in the material so that the material is repelled from the conductive members during the casting process.

0712 Method for Continuously Casting
S. J. Savage
Department of the Air Force, Washington, DC
Filed 16 Nov 84 14p
PAT-APPL-6-672 237 Available from NTIS: price code A02
A process and apparatus for continuously casting a castable material to a thickness of 10 to 40 mils. A molten material is first spread onto a spreading roller to a uniform thickness and then transferred to a quenching roller whereon the material is cooled until dimensionally stable. The apparatus may be employed to continuously cast thin sheet, platelets, wire, etc. The materials castable by this process and apparatus include metals, alloys, glasses, thermoplastic materials and metalloids.

0713 Method for Melt-Coating a Surface
D. L. Miller
Department of the Navy, Washington, DC
Filed 1 Jul 85 12p
PAT-APPL-6-750 218 Available from NTIS: price code A02
A method for coating a surface comprises providing an electrostatically charged powder, irradiating the powder with energy until the powder or the surface melts, and allowing the surface to solidify. Electrostatically charging a powder causes a charge to be placed on the surface of each particle. It is sometimes referred to as ionizing the powder. If sufficient charge is placed on the powder, the effect is to decrease the bulk density of the powder by increasing the separation between some or all the particles. It is the increased separation that improves the absorption of energy by a powder.

Method for Refining Microstructures of Cast Titanium Articles
See 0809

0714 Method for the Fabrication of Dielectric Isolated Junction Field Effect Transistor and PNP Transistor
K. F. Cunniff
Department of the Air Force, Washington, DC
Filed 24 Feb 83, patented 13 Nov 84 6p
PATENT-4 481 707 Available from Comm. of Patents
The process of fabricating a dielectrically isolated junction field effect transistor and a PNP transistor on a common substrate. An epitaxially layer is deposited on the base substrate to form the channel region of the junction field effect transistor. Impurities for the source and drain of the field effect transistor are diffused into the epitaxial layer. Impurities to form the gate are diffused into the epitaxially layer between the source and gate regions but separated therefrom. The PNP transistor which is dielectrically isolated from the field effect transistor by grooves, is formed by the diffusion into the base substrate of the respective impurities that form the base, collector and emitter regions of the PNP transistor.

0715 Method for Ultrasonic Bonding to Soft Microelectronic Substrates
B. L. Conroy, C. T. Cruzan
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 22 Apr 85 7p
PAT-APPL-6-725 726 Available from NTIS: price code A02
A method of ultrasonically bonding electrical leads to soft microelectro nic substrates such as those which are Teflon-based is discussed. According to the inventive method, an interconnecting element such as a gold-plated copper disc is soldered to the substrate, and an electrical lead thereafter ultrasonically bonded to the interconnecting element. In contrast to the soft substrate, the interconnecting element does not dissipate ultrasonic energy and permits an ultrasonic bond to be formed between the electrical lead and interconnecting elements.

0716 Method for Uniformly Bending Conduits
S. J. Dekanich
Department of Energy, Washington, DC
Filed 27 Apr 84 8p
PAT-APPL-6-604 666 Available from NTIS: price code A02

The present invention is directed to a method for bending metal tubing through various radii while maintaining uniform cross section of the tubing. The present invention is practical by filling the tubing to a sufficient level with water, freezing the water to ice and bending the ice-filled tubing in a cooled die to the desired radius. The use of the ice as a filler material provides uniform cross-sectional bends of the tubing and upon removal of the ice provides an uncontaminated interior of the tubing which will enable it to be used in its intended application without encountering residual contaminants in the tubing due to the presence of the filler material.

0717 Method of Bonding Silver to Glass and Mirrors Produced According to This Method
J. R. Pitts, T. M. Thomas, A. W. Czanderna
Department of Energy, Washington, DC
Filed 31 Jul 84 28p
PAT-APPL-6-636 511 Available from NTIS: price code A03

A method for adhering silver to a glass substrate for producing mirrors includes attaining a silicon enriched substrate surface by reducing the oxygen therein in a vacuum and then vacuum depositing a silver layer onto the silicon enriched surface. The silicon enrichment can be attained by electron beam bombardment, ion beam bombardment, or neutral beam bombardment. It can also be attained by depositing a metal, such as aluminum, on the substrate surface, allowing the metal to oxidize by pulling oxygen from the substrate surface, thereby leaving a silicon enriched surface, and then etching or eroding the metal oxide layer away to expose the silicon enriched surface. Ultraviolet rays can be used to maintain dangling silicon bonds on the enriched surface until covalent bonding with the silver can occur. This disclosure also includes encapsulated mirrors with diffusion layers built therein. One of these mirrors is assembled on a polymer substrate.

0718 Microwave Drying of Ammonium Perchlorate Grinding Spheres
D. C. Sayles
Department of the Army, Washington, DC
Filed 10 Nov 83, patented 30 Apr 85 4p
PATENT-4 513 513 Available from Comm. of Patents

Disclosed is a method of microwave drying of ammonium perchlorate grinding spheres. A preferred embodiment of the method employs a tunnel oven in combination with a microwave generator having an appropriate power supply. The tunnel oven receives microwave energy through transmission ducts in communication with a channeling device to distribute microwave energy over the grinding spheres to be dried. A preheated air supply facilitates moisture removal from the tunnel oven after the moisture adhered or occluded to the grinding spheres' surfaces is evaporated from the grinding spheres as a result of molecular vibrations of the water molecules after they absorb the microwave energy. A predetermined microwave frequency range and a predetermined drying time are employed to more efficiently remove adhered or occluded moisture from carbide grinding spheres as compared to conventional convection drying.

Optimizing Hot Workability and Controlling Microstructures in Difficult to Process High Strength and High Temperature Materials
See 0812

0719 Photoionization Technique for Growth of Metallic Films
J. G. Eden
Department of the Air Force, Washington, DC
Filed 29 May 85 21p
PAT-APPL-6-738 817 Available from NTIS: price code A02

A novel method and system for depositing films of selected matallic or semiconductor materials, and particularly of the group III, IV, and V elements, is described which comprises heating a halide compound of the material to produce vapor within a substantially closed chamber, irradiating the vapor with light of preselected wavelength to dissociatively photoionize the vapor with light of preselected wavelength to dissociatively photoionize the vapor into the constituent positive ions of the material and negative halogen ions, and subjecting the photoionized vapor to an electric field to selectively remove the positive ions of the material for plating as a film. (Patent applications)

0720 Plasma Spray Screen Repair Method
W. J. Lewis
Department of the Air Force, Washington, DC
Filed 15 Mar 85 9p
PAT-APPL-6-711 936 Available from NTIS: price code A02

It is an object of this patent application to provide a method for high temperature repair of finely meshed stainless steel screens which can withst and temperatures on the order of 1000 degrees F. Another object is to provide a method for precision repair of finely meshed stainless steel screen employing a plasma spray process. A method is disclosed in high temperature repair of damaged fuel cell screens comprising the steps of forming a mask, bathing the screen to be repaired in pure argon, masking the damage site with the mask, applying to the site selected repair material via plasma spray in several cycles each cycle interspersed with a cooling period, where a test wafer may be exposed on the surface of the mask for metering purposes. The method is particularly applicable to the repair of stainless steel screens used in gas pressurized fuel systems.

0721 Pressurized Heat Treatment of Glass Ceramic
D. P. Kramer
Department of Energy, Washington, DC
Filed 19 Apr 84 15p
PAT-APPL-6-602 035 Available from NTIS: price code A02

A method of producing a glass-ceramic having a specified thermal expansion value is disclosed. The method includes the step of pressurizing the parent glass material to a predetermined pressure during heat treatment so that the glass-ceramic produced has a specified thermal expansion value. Preferably, the glass-ceramic material is isostatically pressed. A method for forming a strong glass-ceramic to metal seal is also disclosed in which the glass-ceramic is fabricated to have a thermal expansion value equal to that of the metal. The determination of the thermal expansion value of a parent glass material placed in a high-temperature environment is also used to determine the pressure in the environment.

0722 Process and Bath for Electroplating Nickel-Chromium Alloys
D. S. Lashmore
Department of Commerce, Washington, DC
Filed 30 Dec 83, patented 24 Jul 84 10p
PATENT-4 461 680 Available from Comm. of Patents
A process for the electrodeposition of a nickel chromium alloy on a cathodic substrate comprises: contacting the substrate with an aqueous electrolyte containing: about 50-125 g/l of CrCl3,6H2O; about 10-125 g/l of NiCl2,6H2O; about 10-115 g/l of formic acid; about 25-50 g/l of boric acid; and about 50-100 g/l of sodium citrate dihydrate; adjusting the pH of the bath to about 1-5 and the temperature to about 20-60C; and passing a sufficient current through the solution and to the substrate to effect deposition thereon of a nickel-chromium alloy.

0723 Process for Improving the Quality of Epitaxial Silicon Films Grown on Insulating Substrates
H. M. Manasevit
Department of the Air Force, Washington, DC
Filed 27 Feb 85 28p
PAT-APPL-6-706 205 Available from NTIS: price code A03
The present invention accomplishes the thermal oxidation of the silicon side of the interface present in epitaxial silicon films grown on yttria-stabilized cubic zirconia, < Si >/< YSZ >, to form a dual-layer structure of < Si >/amorphous SiO2/< YSZ >. The SiO2 films are formed in either dry oxygen (at 1100 C) or in pyrogenic steam (at 925 C) by the rapid diffusion of oxidizing species through a 425 micrometers thick cubic zirconia substrate. For instance, a 0.17 micrometers thick SiO2 layer is obtained after 100 min in pyrogenic steam at 925 C. This relatively easy transport of oxidants is unique to YSZ and other insulators which are also superionic oxygen conductors, and cannot be achieved in other existing Si/insulator systems, such as silicon-on-sapphire.

0724 Process for Making a Heterojunction Source-Drain Insulated Gate Field-Effect Transistors Utilizing Diffusion to Form the Lattice
H. H. Wieder, A. R. Clawson
Department of the Navy, Washington, DC
Filed 14 Dec 81, patented 4 Sep 84 4p
PATENT-4 468 851 Available from Comm. of Patents
An apparatus for and a method of making heterojunction source-drain insulated gate field-effect transistors in order to obtain higher gain-bandwidth products at microwave frequencies. A semi-insulating InP semiconductor substrate is provided with a ternary alloy layer of p-type Ga0.47In0.53As, or optionally, an acceptor-doped p-type bulk of Ga0.47In0.53As can be substituted. Troughs are shaped in the substrate and layer for receiving a material lattice-matched to the n/ p-type Ga0.47In0.53As to perform as the source and drain contacts, n/ doped InP might be a suitable material. An optional method for forming the contacts calls for directing a stream of phosphine and hydrogen onto source and drain contact windows contacting the Ga0.47In0.53As which is heated to 750 deg C. for about 15 minutes. This creates graded heterojunction source and drain contacts having a lattice-matching variable composition.

Process to Produce Fine Line Metallic Collection Patterns on Semiconductors Devices
See 0815

Production of Silver Metallization by the Decomposition of Silver Compounds
See 0768

Robotic Order Picking
See 0683

0725 Split-Cross-Bridge Resistor for Testing for Proper Fabrication of Integrated Circuits
M. G. Buehler
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 26 Jul 82, patented 7 May 85 15p
PATENT-4 516 071 Available from Comm. of Patents
An electrical testing structure and method is described whereby a test structure is fabricated on a large scale integrated circuit wafer along with the circuit components and has a van der Pauw cross resistor in conjunction with a bridge resistor and a split bridge resistor, the latter having two channels each a line width wide, corresponding to the line width of the wafer circuit components, and with the two channels separated by a space equal to the line spacing of the wafer circuit components. The testing structure has associated voltage and current contact pads arranged in a two by four array for conveniently passing currents through the test structure and measuring voltages at appropriate points to calculate the sheet resistance, line width, line spacing, and line pitch of the circuit components on the wafer electrically.

0726 Technique of Assembling Structures Using Vapor Phase Soldering
N. C. Peterson
Department of the Air Force, Washington, DC
Filed 19 Oct 84 15p
PAT-APPL-6-663 015 Available from NTIS: price code A02
This patent application pertains to a vapor phase process for assembling parts of a lightweight structure of aluminum having a multitude of joints. The process includes the following steps: (1) cleaning surfaces of all the parts; (2) selectively depositing on the surfaces a layer of nickel and then tin; (3) selectively plating on the tin layer where joints occur a lead/tin eutectic alloy solder; (4) add flux; (5) fixturing the parts together to form the structure; (6) heating the structure in a vapor phase apparatus; (7) removing the structure from the fixture; and (8) cleaning the structure. By using the above process an antenna faceplate having over 3000 joints was soldered.

Titanium Metal-Matrix Composites
See 0788

MARINE TECHNOLOGY

0727 Combined Riblet and Lebu Drag Reduction System
M. J. Walsh, J. N. Hefner, J. B. Anders
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 27 Dec 84 17p
PAT-APPL-6-686 959 Available from NTIS: price code A02
The invention is a system of flow control devices which result in reduced skin friction on aerodynamic and hydrodynamic surfaces. The devices cause a breakup of large-scale disturbances in the boundary layer of the flow field. The riblet device acts to reduce disturbances near the

boundary layer wall by the use of longitudinal striations forming vee-shaped grooves. These grooves are dimensional on the order of the wall vortices and turbulent burst dimensions. The large eddy breakup device is a small strip or airfoil which is suspended in the upper region of the boundary layer. Various physical mechanisms cause a disruption of the large scale vortices. The combination of the devices of this invention result in a substantial reduction in skin friction drag.

0728 Current Stabilized Underwater Platform
L. T. Campbell, F. E. Gordon, H. Torkelson
Department of the Navy, Washington, DC
Filed 30 Jul 79, patented 31 Jul 84 10p
PATENT-4 462 330 Available from Comm. of Patents
This patent discloses an apparatus for providing a stable platform for equipment to be employed in an underwater environment which includes a fin assembly for preventing uncontrolled azimuthal motion of the equipment when the fin assembly is suspended in the underwater environment to a level at which a current is present. The equipment is joined to a mounting which is rotatably positioned upon the fin assembly, and is oriented to a selected azimuth by the rotatable mounting in response to control signals received thereby, the fin assembly remaining at a fixed azimuthal orientation determined by the direction of the current as the mounting azimuthally displaces the equipment.

0729 Deep Submergence Vehicle (DSV) Lightweight Cable Cutter,
R. S. Reich, J. L. Held, A. E. Munson, J. R. Hartley
Department of the Navy, Washington, DC
Filed 1 Nov 82, patented 7 Aug 84 8p
PATENT-4 463 496 Available from Comm. of Patents
An improved cable cutter for undersea use is presented which has a self-contained, pressure compensated hydraulic system which allows it to operate in the deep ocean. The cable cutter is designed to operate from and mate with manipulators of Navy deep submergence vehicles. The concept of this cable cutter is a closed hydraulic system which provides driving force on a piston pushing a cutting blade against an anvil. The hydraulic pump has a drive shaft which mates with the rotary output of a deep submergence vehicle manipulator. The hydraulic fluid reservoir also serves as a pressure compensator for working in the deep ocean. The hydraulic fluid system comprises a main cylinder which contains the drive piston and a secondary cylinder which consists of a flexible tube that allows fluid pressure equalization with the environment as well as volume compensation. Both cylinders are mounted between manifold components. One manifold component is rigidly connected to the cutter end of the drive piston cylinder, and the other manifold component rigidly connected to the other end of the drive piston cylinder is in contact with an assembly containing the internal gear pump.

Echometry Device and Method
See 0528

0730 Elevator/Hatch Controller Platform Leveling Logic with Safety Features
G. O. Thomas
Department of the Navy, Washington, DC
Filed 24 Mar 83, patented 11 Dec 84 14p
PATENT-4 487 293 Available from Comm. of Patents
An elevator levelling/hatch control circuit including a motor controller, an elevator dispatching unit, an elevator location sensing unit, and a control unit. The control unit receives hatch position signals, monitors the speed and direction of elevator motion and generates hatch open/close commands and elevator speed and direction commands to assure safe elevator operation in a shipboard environment. In one embodiment the circuit utilizes miniature electromechanical relays that may be visually monitored and easily tested.

0731 Expendable Bathythermograph for Measuring Light Attenuation and Temperature Below the Ocean Surface
C. H. Sinex, B. E. Raff
Department of the Navy, Washington, DC
Filed 12 Jun 85 13p
PAT-APPL-6-744 084 Available from NTIS: price code A02
An expendable bathythermograph sensor is modified to include a fiber optic light pipe mounted thereon to carry incident light to a photodiode unit located inside the sensor. A thermistor is mounted on the sensor, and the photodiode unit includes multiplexed electronics for transmitting both optical and temperature data to measure temperature and light as a function of ocean depth.

0732 Improved Ship Deck Lifeline
R. I. Coles, N. J. Griest, R. J. Marando, A. A. Suleske
Department of the Navy, Washington, DC
Filed 6 Feb 84 11p
PAT-APPL-6-577 437 Available from NTIS: price code A02
A ship deck lifeline has an insulator fitting interposed between the metal cable and the metal end stanchion. The lifeline cable is insulated from the metal ship deck thereby reducing electrical interference with the ship's electronic instrumentation. The insulator fitting is designed to be easily retrofit to existing lifelines.

0733 Improvements in Linked-Spar Motion-Compensated Lifting System
R. A. Olsen, R. A. Cuthbertson
Department of the Navy, Washington, DC
Filed 4 Oct 84 22p
PAT-APPL-6-657 641 Available from NTIS: price code A02
An improved system for operating a lifting cable over the side of a ship at sea in which a spar buoy having an adjustable lifting capacity is coupled to the shop by a rigid linkage which is free to pivot on an axis attached to the ship deck, and operates to decouple the motion of the ship from lifting cable. The spar buoy is attached to a gimbal sheave assembly having a disengageable connector and tension line for drawing the connector into engagement with a mating socket at the outward end of a linkage boom. A narrow upper section of the spar buoy is provided with a plurality of vertical tubes and valves which by flooding or evacuation operate to vary the effective water plane area of the buoy for continual fine tuning and optimally adjusting of its natural heave mode characteristic frequency.

In-Situ Annular Face Grinder
See 0668

0734 Method of Making an Undersea, High Pressure Bulkhead Penetrator for Use with Fiber Optic Cables
S. J. Cowen, J. H. Daughtry, C. M. Young, J. T. Redfern
Department of the Navy, Washington, DC
Filed 30 Dec 81, patented 4 Sep 84 6p
PATENT-4 469 399 Available from Comm. of Patents
This invention is directed to providing a method for making a penetrator capable of optically transmitting through a wall

separating a first medium from a higher pressure medium. A high pressure penetrator for use with fiber optic cables is fabricated by a method which assures reliable operation. The method of fabrication first calls for providing a bore through the pressure wall of a container of instrumentation. Applying wax to one end of a cylindrically-shaped lens prepares it for alignment in the bore. A suitable lens is the one-half pitch graded refractive index lens of the type marketed under the trademark, SELFOC. The cylindrically-shaped lens is inserted into the bore to locate its far end flush with one side of the wall and so that the wax applied end of the lens lies within the bore at the wall's opposite side. Melting the wax allows it to flow around the tip of the wax applied end of the lens and a subsequent cooling of the melted wax precisely fixes the cylindrically-shaped lens into position within the bore. A high strength epoxy resin is potted in the clearance space between the lens and the bore by vacuum drawing the resin into the clearing space so that, upon curing the resin, the lens will be securely held in place to permit an optical aligning of fibers on either end of the lens to assure optical signal transfer.

Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
See 0589

0735 Original Method of Drydocking Ships
M. Yachnis
Department of the Navy, Washington, DC
Filed 8 May 85 12p
PAT-APPL-6-731 700 Available from NTIS: price code A02
This patent application discloses an apparatus for moving a large ship from water to a pre-determined area for repair thereof comprising: lifting means for lifting the ship out of the water; guidance means to guide the ship while it is on the lifting means to the pre-determined repair area; and means for enabling the lifting means to be emplaced on the ship; said enabling means having an entrance.

0736 Remote Self-Contained Undersea Monitor
R. E. Page
Department of the Navy, Washington, DC
Filed 7 Jun 82, patented 30 Oct 84 7p
PATENT-4 480 323 Available from Comm. of Patents
A remote oceanographic data recording system which is self-contained battery operated and removably attachable to an external surface of a submerged hull without a need to penetrate said hull is presented. The system is capable of gathering and recording oceanographic data and may be joined to the hull of a submarine without interfering in submarine operation in any way. The system receives analog ac and dc electrical input signals from a variety of oceanographic data sensors and converts the signals to digital data signals for recording on magnetic tape cassette. The housing the system is watertight and capable of withstanding external hydrostatic pressures up to 1620 psi.

Salinity Driven Oceanographic Upwelling
See 0023

0737 Sonobuoy Float Inflation and Depth Selection Initiators
J. R. Dale
Department of the Navy, Washington, DC
Filed 3 May 82, patented 15 Jan 85 6p
PATENT-4 493 664 Available from Comm. of Patents
A shape-memory alloy initially configured to have engaging potential for a lance, guillotine or pin connected thereto is wrapped in a heating element powered by current from a water activated battery. When the alloy reaches a specific temperature it silently reverts to a predetermined shape. The reversion force is used to displace a lance to pierce a gas cylinder seal to allow inflation of a float and to cut a retaining loop or withdraw a pin to payout a preset length of hydrophone suspension cable.

0738 Sump Arrangement for Snorkel Intake
H. O. Farrington
Department of the Navy, Washington, DC
Filed 22 Apr 85 12p
PAT-APPL-6-725 710 Available from NTIS: price code A02
There is disclosed an improved sump arrangement for use on a submarine equipped with a snorkel for handling intake air when submarine is operating just below the ocean surface at periscope depth. The sump is located in a fan room aboard the submarine depth. The sump is located in a fan room aboard the submarine and is designed to effectively separate water from intake air and selectively throttle the volume of air during periods of excessive water intake for allowing the system to reach an operating equilibrium.

Test Device for Expendable Bathythermograph Set (XBT)
See 0638

0739 Wave Powered Buoy Generator
R. A. Rowe
Department of the Navy, Washington, DC
Filed 2 Dec 82, patented 8 Jan 85 8p
PATENT-4 492 875 Available from Comm. of Patents
The wave power buoy generator includes a hollow buoy which has inner and outer surfaces. The buoy is preferably spherical in shape. One or more windings are mounted to the buoy parallel to its surfaces with each winding having a pair of ends. A magnetized device which, is preferably a ball, is located within the buoy for rolling back and forth therein. A device is connected to the ends of the windings for rectifying current flow therefrom. With this arrangement the buoy can be moored in a body of water, and, when there is water motion, the flux lines of the magnetized roller device cut one or more windings so as to cause electrical current flow to be provided through the rectifying device.

MATERIALS: Adhesives & Sealants

0740 Biocompatible Cementitious Dental Compositions
G. M. Brauer, J. W. Stansbury
Department of Health and Human Services, Washington, DC
Filed 23 Feb 84, patented 4 Dec 84 22p
PATENT-4 486 179 Available from Comm. of Patents
Dental cements with syringate esters such as 2-ethylhexyl syringate with or without vanillate esters dissolved in o-ethoxybenzoic acid as ingredients of the liquid when mixed with metal oxide powder yield rapid setting, insoluble cements that have high strength, do not inhibit free radical polymerization, adhere strongly to metal, and reduce carries. Use of silanized glass filler to the powder in conjunction with the addition of monomer to the liquid gives an even stronger cement.

0741 Cryogenic Glass-to-Metal Seal
M. O. Landram
Department of the Air Force, Washington, DC
Filed 29 Aug 84 15p
PAT-APPL-6-645 389 Available from NTIS: price code A02
A novel low temperature vacuum seal and method of making same for joining a nonmetallic element, such as an optical port, to a metallic element is described which comprises first and second thin metallic layer applied to the nonmetallic element to provide substantial adhesion and solderability to the nonmetallic element. A third metallic layer applied to the metallic element provides solderability to the metallic element. The nonmetallic and metallic elements are joined by a layer of low temperatures solder interfacing their respective solder surfaces. A further thin metallic layer may be applied to the nonmetallic element to provide substantial wetability to the solderable second layer.

0742 Damping Seal for Turbomachinery
G. L. Vonpragenau
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 18 Jan 85 11p
PAT-APPL-6-669 287 Available from NTIS: price code A02
A damping seal between a high speed rotor member and stator member that separates pressurized fluid compartments is described. It is characterized by the rotor member having a smooth outer surface and the stator member having its bore surface roughened by a plurality of pockets or depressions.

0743 Elastomer Toughened Polyimide Adhesives
A. K. St. Clair, T. L. St. Clair
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 28 Jan 83, patented 5 Feb 85 7p
PATENT-4 497 935 Available from Comm. of Patents
A rubber-toughened, addition-type polyimide composition is disclosed which has excellent high temperature bonding characteristics in the fully cured state and improved peel strength and adhesive fracture resistance physical property characteristics. The process for making the improved adhesive involves preparing the rubber-containing amic acid prepolymer by chemically reacting an amine-terminated elastomer and an aromatic diamine with an aromatic dianhydride with which a reactive chain stopper anhydride has been mixed, and utilizing solvent or mixture of solvents for the reaction.

0744 Fluorinated Diacrylic Esters
J. R. Griffith, J. G. O'Rear
Department of the Navy, Washington, DC
Filed 6 Aug 82, patented 5 Jun 84 4p
PATENT-4 452 998 Available from Comm. of Patents
Acrylic polymers, whether linear or cross-linked, are excellent adhesives. They can be easily fabricated into many different components and shapes. Acrylics have exceptional optical clarity, strength, and dimensional and color stability. They have a convenient liquid-to-solid transition upon curing and can by curved by radiation. Fluorocarbons have a much broader resistance to physical and chemical attack than acrylic polymers, but lack the advantages of acrylic polymers. It is an object of the present invention to substantially increase the fluorocarbon content in acrylic resins, without interfering with the acrylate properties. Another object of this invention is to vary the fluorine content of fluoacrylic resins over wide ranges through the placement of perfluoroalkyl pendant groups of different lengths. These and other objects are achieved by reacting a fluoroaromatic dol and acryloyl chloride in a highly fluorinated solvent with an acid acceptor to form a fluorinated diacrylate ester monomer and purifying the monomer by forming a solution, adding decolorizing carbon to the solution and percolating the solution through activated alumina.

High Temperature Ultra-High Vacuum Infrared Window Seal
See 1005

0745 Hot Melt Adhesive Attachment Pad
R. L. Fox, A. W. Frizzill, B. D. Little, D. J. Progar, R. H. Coultrip
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 22 Jul 83, patented 18 Dec 84 10p
PATENT-4 488 335 Available from Comm. of Patents
A hot melt adhesive attachment pad for releasably securing distinct elements together is described which is particularly useful in the construction industry or a spatial vacuum environment. The attachment pad consists primarily of a cloth selectively impregnated with a charge of hot melt adhesive, a thermo-foil heater, and a thermo-cooler. These components are securely mounted in a mounting assembly. In operation, the operator activates the heating cycle transforming the hot melt adhesive to a substantially liquid state, positions the pad against the attachment surface, and activates the cooling cycle solidifying the adhesive and forming a strong, releasable bond.

0746 Lateral Support System for Canister-Launched Missile
W. E. Simon
Department of the Air Force, Washington, DC
Filed 15 Mar 83, patented 14 Aug 84 4p
PATENT-4 464 972 Available from Comm. of Patents
A novel lateral support systems for a canister launched missile is provided which comprises, a plurality of long, narrow flexible pads of elastomer or like material disposed on the surface of said missile along a substantial lengthwise portion thereof and configured to substantially fill the annular gap between the missile and canister, each of said pads being hingedly attached near the canister exit opening whereby the pads are peeled from the surface of the missile during launch thereof.

0747 Method for Bonding Insulator to Insulator
H. Wohltjen, J. F. Giuliani
Department of the Navy, Washington, DC
Filed 21 Dec 82, patented 5 Jun 84 5p
PATENT-4 452 624 Available from Comm. of Patents
This abstract discloses a method for making an airtight seal between a pair of insulator elements, such as glass plates, without destroying any fine structure etched in the insulator elements. A thin metal film is deposited on one of the elements to be sealed and then placed in intimate contact with the other element to be sealed. The elements are then heated to a temperature well below their softening point, but high enough to significantly enhance the ion mobility in the insulator. A voltage is applied across the interface and the resulting anodic reaction consumes the film at the interface while producing a strong hermetic bond between the insulator elements.

0748 Non-Aqueous Dental Cements Based on Dimer and Trimer Acids
J. M. Antonucci
Department of Health and Human Services, Washington, DC
Filed 14 Mar 85 27p
PAT-APPL-6-712 102 Available from NTIS: price code A03
This invention relates generally to dental compositions and more particularly to dental cements based on dimer and trimer acids.

0749 Oxidizing Seal for a Turbine Tip Gas Path
J. D. Cawley
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 19 Apr 84, patented 10 Sep 85 7p
PATENT-4 540 336 Available from Comm. of Patents
The sealing of the gas path in a gas turbine engine at the blade tips is improved by maintaining a minimum clearance between the rotor blade tips and the gas path seal. This is accomplished by taking advantage of an increase in volume during controlled oxidation of certain intermetallic compounds which have high melting points. The increase in volume closes the clearance subsequent to a rub between the blades and the seal. Thus, these compounds re-form the tip seal surface to assure continued engine efficiency.

Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
See 0831

0750 Rubber Modified Epoxy Adhesive
D. J. Crabtree, E. Y. Park
Department of the Navy, Washington, DC
Filed 2 Mar 83, patented 9 Oct 84 5p
PATENT-4 476 285 Available from Comm. of Patents
A rubber-modified epoxy adhesive and the method of making the same is disclosed for use in bonding graphite-epoxy composite structures. The adhesive comprises a two-part formulation, one part being a reaction product of a carboxyl terminated reactive liquid rubber pre-reacted with a bisphenol. A epoxy resin so that linear epoxy-rubber chains are developed. The second part of the adhesive is an amine curing agent. One effective example of the adhesive is formulated as follows: approximately 4 parts by weight of the bisphenol A epoxy resin is mixed per part of a carboxyl terminated butadiene acrylonitrile rubber and heated to 170 deg C. At 160 deg C., a catalyst of approximately 0.01 parts by weight of triphenyl phosphene per part of the rubber is added and the mixture stirred for one hour at 170 deg - 175 deg C. to provide the reaction product. After cooling to room temperature, the reaction product may be packaged in pre-measured quantities for mixture, when required, with a curing agent of cycloaliphatic diamine at a ratio of approximately 4:1.

0751 Sealing Assembly
H. H. Dobbs
Department of the Army, Washington, DC
Filed 12 Oct 84 8p
PAT-APPL-6-660 574 Available from NTIS: price code A02
An improved sealing system is described for use in a sliding seal. the seal has a sliding member with first and second L-shaped seals and an annular opening. One L-shaped seal serves to seal junction of the annular opening with the sliding member and the second seal serves to seal the sliding member to the bore.

0752 Sodium Nitrate Containing Mixture for Producing Ceramic-Glass-Ceramic Seal by Microwave Heating
R. D. Blake, T. T. Meek
Department of Energy, Washington, DC
Filed 10 Oct 84 12p
PAT-APPL-6-659 586 Available from NTIS: price code A02
A mixture for, and method of using such a mixture, for producing a ceramic-glass-ceramic seal by the use of microwave energy are disclosed, wherein the mixture comprises a glass sealing material, a coupling agent, and an oxidizer. The seal produced exhibits greater strength due to its different microstructure. Sodium nitrate is the most preferred oxidizer.

0753 Structural Pressure Sensitive Silicone Adhesives
J. L. Leiffer, W. E. Stoops, T. I. St.Clair, V. E. Watkins, T. P. Kelly
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 12 Jan 84 8p
PAT-APPL-6-569 536 Available from NTIS: price code A02
An intermediate molecular weight pressure sensitive silicone adhesive is blended with a silicone system, which generally cures with a catalyst to a rubbery tack-free state, to form a pressure sensitive silicone adhesive which is used for structural or load bearing applications without creeping. The adhesive was formulated to give various degrees of tackiness and loading bearing capabilities. This adhesive was successfully utilized from -45 C to /232 C with the tackiness for a 60/40 (tackifier/cured silicone system) pressure sensitive silicone mixture ranging from slight at -45 C to extremely tacky at 232 C.

Thermally Stable Thermoset Resin Compositions
See 0837

0754 Variable Friction Secondary Seal for Face Seals
E. Dirusso
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 16 Nov 84 8p
PAT-APPL-6-672 224 Available from NTIS: price code A02
Vibration and stability of a primary seal ring are controlled by a secondary seal system. An inflatable bladder which forms a portion of secondary seal varies the damping applied to this seal ring. The amplitude of vibration of the primary seal ring is sensed with a proximity probe that is connected to a microprocessor in a control system. The bladder pressure is changed by the control system to mitigate any sensed instability or vibration.

MATERIALS: Coatings

0755 Apparatus for Producing Diamond-Like Carbon Flakes
B. A. Banks
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 5 Nov 84 12p
PAT-APPL-6-668 433 Available from NTIS: price code A02
A vacuum are from a spot at the face of a graphite cathode to a graphite anode produces a beam of carbon ions and atoms. A carbon coating from this beam is deposited on an

ion beam sputtered target to produce diamondlike carbon flakes. A graphite tube encloses the cathode, and electrical isolation is provided by an insulating sleeve. The tube forces the vacuum arc spot to be confined to the surface on the outermost end of the cathode. Without the tube the arc spot will wander to the side of the cathode. This spot movement results in low rates of carbon deposition, and the properties of the deposited flakes are more graphite-like than diamond-like.

0756 BN (Boron Nitrates) Coating of Ceramic Fibers for Ceramic Fiber Composites
R. W. Rice
Department of the Navy, Washington, DC
Filed 11 Feb 85 22p
PAT-APPL-6-700 246 Available from NTIS: price code A02
This patent application discloses ceramic fiber composite material compr ised of boron nitride coated ceramic fibers embedded in a ceramic matrix. The boron nitride coating limits both physical bonding and chemical reaction between the fibers and matrix to improve both strength and toughness of the composite material.

Corrosion Resistant Coating
See 0800

0757 Deposition of Diamondlike Carbon Films
M. J. Mirtich, J. S. Sovey, B. A. Banks
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 9 Jul 84, patented 25 Dec 84 6p
PATENT-4 490 229 Available from Comm. of Patents
A diamondlike carbon film is deposited in the surface of a substrate by exposing the surface to an argon ion beam containing a hydrocarbon. The current density in the ion beam is low during initial deposition of the film. Subsequent to this initial low current condition, the ion beam is increased to full power. At the same time, a second argon ion beam is directed toward the surface of the substrate. The second ion beam has an energy level much greater than that of the ion beam containing the hydrocarbon. This addition of energy to the system increases mobility of the condensing atoms and serves to remove lesser bound atoms.

0758 Diamondlike Flakes
B. A. Banks
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 19 Mar 84, patented 22 Jan 85 6p
PATENT-4 495 044 Available from Comm. of Patents
A carbon coating was vacuum arc deposited on a smooth surface of a target which was simultaneously ion beam sputtered. The bombarding ions have sufficient energy to create diamond bonds. Spalling occurs as the carbon deposit thickens. The resulting diamond like carbon flakes improve thermal, electrical, mechanical, and tribological properties when used in aerospace structures and components.

0759 Diffusely Reflecting Paints Including Polytetrafluoroethylene and Method of Manufacture
J. B. Schutt, M. C. Shai
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 26 Apr 84, patented 21 May 85 6p
PATENT-4 518 722 Available from Comm. of Patents
The invention pertains to a high diffuse, reflective paint comprising an alcohol soluble binder, polytetrafluoroethylene (TFE) and an alcohol for coating a substrate and forming an optical reference with a superior Lambertian characteristic. A method for making the paint by first mixing the biner and alcohol, and thereafter by mixing in outgassed TFE is described. A wetting agent may be employed to aid the mixing process.

0760 Fluorination by Inorganic Fluorides in Glow Discharge
T. Yagi, A. E. Pavlath
Department of Agriculture, Washington, DC
Filed 7 Jun 82, patented 2 Apr 85 8p
PATENT-4 508 781 Available from Comm. of Patents
A process for the surface fluorination of a carbon containing synthetic or natural polymer capable of forming a carbon-fluoride bond on fluorination, in a glow discharge reactor, utilizing inorganic fluorides as the fluorination agent.

0761 Improved Thermal Barrier Coating System
S. Stecura
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 14 Aug 84 8p
PAT-APPL-6-640 712 Available from NTIS: price code A02
An oxide thermal barrier coating is described which comprises ZrO3 - Yb2O3 that is plasma sprayed onto a previously applied bond coating. The zirconia is partially stabilized with about 12.4 v/o ytterbia to insure cubic, monoclinic, and tetragonal phases.

Method and Apparatus for Conducting Variable Thickness Vapor Deposition
See 0806

Method for Melt-Coating a Surface
See 0713

0762 Moisture Absorbing Anti-Arcing Coating and Method For Applying Same
C. Ritter, R. W. Kreps
Department of the Navy, Washington, DC
Filed 4 Apr 84 6p
PAT-APPL-6-596 784 Available from NTIS: price code A02
A moisture absorbing, anti-arcing compound comprises a mixture of a moisture active isocyanate resin and a generic anti-arcing compound. The isocyanate resin reacts with residual moisture in a high voltage ceramic insulator, thus tying it up chemically. This prevents diffusion of the moisture into the anti-arcing compound and resultant degradation. The compound according to this invention is especially useful for ceramics which may not be baked dry at elevated temperatures.

0763 Overlay Metallic-Cermet Alloy Coating Systems
M. A. Gedwill, S. R. Levine, T. K. Glasgow
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 30 Jul 82, patented 1 May 84 7p
PATENT-4 446 199 Available from Comm. of Patents
A substrate, such as a turbine blade, vane, or the like, which is subjected to high temperature use is coated with a base coating of an oxide dispersed, metallic alloy (cermet). A top coating of an oxidation, hot corrosion, erosion resistant alloy of nickel, cobalt, or iron is then deposited on the base coating. A heat treatment is used to improve the bonding. The base coating serves as an inhibitor to interdiffusion between the protective top coating and the substrate. Otherwise, the protective top coating would rapidly interact detrimentally with the substrate and degrade by

spalling of the protective oxides formed on the outer surface at elevated temperatures.

0764 Oxidation Protection Coatings for Polymers
M. J. Mirtich, B. A. Banks, J. S. Sovey
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 11 Sep 84 11p
PAT-APPL-6-649 330 Available from NTIS: price code A02
A polymeric substrate is coated with a metal oxide film to provide oxidation protection in low earth orbital environments. The film contains about 4 volume percent polymer to provide flexibility. A coil of polymer material moves through an ion beam as it is fed between reels. The ion beam irst cleans the polymer material surface and then sputters the film material from a target onto this surface.

Photoionization Technique for Growth of Metallic Films
See 0719

Process for Preparation of Crosslinked Poly(tri-n-butyltin) Methacrylate with Simultaneous Particle Size Reduction
See 0076

0765 Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
A. K. St. Clair, T. L. St. Clair
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 23 Aug 84 23p
PAT-APPL-6-643 524 Available from NTIS: price code A02
A polyimide film that is approximately 90% transparent at 500 nm, useful for thermal protective coatings and solar cells, and the processes for preparing the same by thermal and chemical conversion are disclosed. An essential feature for achieving maximum optical transparency films requires utilizing recrystallized and/or sublimated specific aromatic diamines and dianhydride monomers and introducing phenoxy or thiophenyl separator groups and isomeric m,m'- or o,p'-oriented diamines into the polymer molecular structure. The incorporation of these groups in the polymer structure serves to separate the chromaphoric centers and reduce the formation of inter-chain and intra-chain charge transfer complexes which normally cause absorptions in the UV-visible range. The films may be obtained by hand, brushing, casting or spraying a layer of the polyamic acid solutions onto a surface and thermally converting the applied layer to the polyimide. In addition, the polyamic acid solution can be chemically converted to the polyimide, subsequentially dissolved in an organic solvent, and applied as a polyimide film layer with the solvent therein thermally removed.

0766 Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
A. K. St. Clair, T. L. St. Clair
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 23 Aug 84 21p
PAT-APPL-6-643 589 Available from NTIS: price code A02
An aromatic condensation polyimide film that is approximately 90% transparent at 500 nm, useful for thermal protective coatings and the process for preparing same are disclosed. A feature to achieve maximum optical transparency films requires the utilization of recrystallized and/or sublimated specific aromatic diamines and dianhydride monomers and introduction bulky electron withdrawing groups and separator groups into the polymer molecular structure. The incorporation of bulky electron withdrawing groups in the diamine portion of the polymer structure serves to reduce the formation of interchain and intrachain charge transfer complexes which normally cause large absorptions in the UV visible range. Incorporation of separator atoms into either the diamine or dianhydride monomers serves to reduce the amount of conjugation and inter and intrachain electronic interactions to lessen charge transfer complex formation.

0767 Process for Producing Carbide Coatings
I. L. Singer, R. A. Jeffries
Department of the Navy, Washington, DC
Filed 6 Jun 84 10p
PAT-APPL-6-617 777 Available from NTIS: price code A02
It is an object of this invention to provide a process for forming a surface alloy upon a solid alloy substrate. It is another subject of this invention to provide a method for the solid-state gettering of minority solutes in an alloy. It is a further object of this invention to provide an ion implantation process for producing a surface alloy upon a solid alloy substrate.

0768 Production of Silver Metallization by the Decomposition of Silver Compounds
R. T. Coyle
Department of Energy, Washington, DC
Filed 22 Feb 84 16p
PAT-APPL-6-582 509 Available from NTIS: price code A02
A method for producing an electrode on a semiconductor substrate includes suspending a finely powdered decomposable compound of silver in an or ganic fluid to form a paste-like substance which is applied to the substrate in a desired pattern using a screen printing process. The substrate is thereafter heated to a suitable temperature for a time sufficient to decompose the silver compound to silver. In another embodiment, a very thin layer of silver is vapor deposited onto the semiconductor substrate to effect forming a thin film conductor. Thereafter, a silver compound is applied to the conductor and thermally decomposed to form a coating of silver on the conductor. In another embodiment, a finely powdered decomposable compound of silver is deposited on a glass substrate, preferably at a temperature to quickly decompose the compound.

0769 Silicon Nitride Protective Coatings for Silvered Glass Mirrors
C. E. Tracy, D. K. Benson
Department of Energy, Washington, DC
Filed 20 Jul 84 19p
PAT-APPL-6-632 742 Available from NTIS: price code A02
A protective diffusion barrier for metalized mirror structures is provided by a layer or coating of silicon nitride which is a very dense, transparent, dielectric material that is impervious to water, alkali, and other impurities and corrosive substances that typically attack the metal layers of mirrors and cause degradation of the mirrors' reflectivity. The silicon nitride layer can be deposited on the substrate prior to metal deposition thereon to stabilize the metal/substrate interface, and it can be deposited over the metal to encapsulate it and protect the metal from corrosion or other degradation. Mirrors coated with silicon nitride according to this invention can also be used as front surface mirrors.

0770 Textured Carbon Surfaces on Copper
A. N. Curren, K. A. Jensen, R. F. Roman
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 10 Oct 84 12p
PAT-APPL-6-659 475 Available from NTIS: price code A02
A very thin layer of highly textured carbon is applied to a copper surface by a triode sputtering process. A carbon target and a copper substrate are simultaneously exposed to an argon plasma in a vacuum chamber. The resulting carbon surface is characterized by a dense, random array of needle like spries or peaks which extend perpendicularly from the copper surface. The coated copper is especially useful for electrode plates in multistage depressed collectors.

0771 Thermal Barrier Coating System
S. Stecura
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 16 Aug 83, patented 27 Nov 84 7p
PATENT-4 485 151 Available from Comm. of Patents
A high temperature oxidation resistant, thermal barrier coating system is disclosed for a nickel cobalt, or iron base alloy substrate. An inner metal bond coating contacts the substrate, and a thermal barrier coating covers the bond coating. NiCrAlR, FeCrAlR, and CoCrAlR alloys are satisfactory as bond coating compositions where R=Y or Yb. These alloys contain, by weight, 24.9-36.7% chromium, 5.4-18.5% aluminum, and 0.05 to 1.55% yttrium or 0.05 to 0.53% ytterbium. The coatings containing ytterbium are preferred over those containing yttrium. An outer thermal barrier coating of partial stabilized zirconium oxide (zirconia) which is between 6% and 8%, by weight, of yttrium oxide (yttria) covers the bond coating. Partial stabilization provides a material with superior durability. Partially stabilized zirconia consists of mixtures of cubic, tetragonal, and monoclinic phases.

Thermally Stable Thermoset Resin Compositions
See 0837

MATERIALS: Composites

0772 Arc Spray Fabrication of Metal Matrix Composite Monotape
L. J. Westfall
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 9 Dec 83, patented 21 May 85 7p
PATENT-4 518 625 Available from Comm. of Patents
Arc metal spraying is used to spray liquid metal onto an array of high strength fibers that were previously wound onto a large drum contained inside a controlled atmosphere chamber. This chamber is first evacuated to remove gaseous contaminants and then backfilled with a neutral gas up to atmospheric pressure. This process is used to produce a large size metal matrix composite monotape.

Biocompatible Cementitious Dental Compositions
See 0740

BN (Boron Nitrates) Coating of Ceramic Fibers for Ceramic Fiber Composites
See 0756

Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0047

Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0049

Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0050

0773 Circumferentially Wrapped Carbon-Carbon Structure
G. A. Wallace, J. E. Zimmer
Department of the Air Force, Washington, DC
Filed 9 Feb 84, patented 11 Jun 85 5p
PATENT-4 522 883 Available from Comm. of Patents
In accordance with the present invention there is provided an improved carbon-carbon composite structure which consists essentially of a central core, a plurality of layers of circumferentially wrapped woven cotton fabric; and a carbon binder, wherein the central core consists essentially of a plurality of longitudinally oriented carbon fibers. There is also provided a method for fabricating an improved carbon-carbon nosetip preform for a reentry vehicle which consists essentially of providing at least one rigidized carbon rod to build up a desired thickness of fabric, impregnating the built-up structure with a suitable binder, carbonizing the binder and graphitizing the composite structure. There is further provided an apparatus for fabricating a nosetip preform which comprises a two-drum surface winder, one drum of which has a surface cover adapted to grip and propel a carbon fabric.

0774 Composite Desiccant Structure
A. V. Fraioli, W. W. Schertz
Department of Energy, Washington, DC
Filed 6 Jun 84 13p
PAT-APPL-6-617 781 Available from NTIS: price code A02
This patent discloses a composite formed of small desiccant particles retained in a dark matrix composed of a porous binder containing a transition metal oxide with pores to provide moisture transport with respect to the particles, and metallic fibers to remove the heat of condensation during dehumidification and provide heat for the removal of moisture during regeneration. The moisture absorbing properties of the composite may be regenerated by exposure of the dark matrix to solar radiation with dehumidification occurring at night.

0775 Conductor-Polymer Composite Electrode Materials
D. S. Ginley, S. R. Kurtz, W. H. Smyrl, J. M. Zeigler
Department of Energy, Washington, DC
Filed 13 Jun 84 19p
PAT-APPL-6-620 306 Available from NTIS: price code A02
A conductive composite material useful as an electrode, comprises a conductor and an organic polymer which is reversibly electrochemically dopable to change its electrical conductivity. Said polymer continuously surrounds the conductor in intimate electrical contact therewith and is prepared by electrochemical growth on said conductor or by reaction of its corresponding monomer(s) on said conductor which has been pre-impregnated or pre-coated with an activator for said polymerization. Amount of the conductor is sufficient to render the resultant composite electrically con-

ductive even when the polymer is in an undoped insulating state.

Diamondlike Flakes
See 0758

0776 Dispersion Toughened Ceramic Composites and Method for Making Same
D. P. Stinton, W. J. Lackey, R. J. Lauf
Department of Energy, Washington, DC
Filed 28 Sep 84 9p
PAT-APPL-6-655 488 Available from NTIS: price code A02
Ceramic composites exhibiting increased fracture toughness are produced by the simultaneous codeposition of silicon carbide and titanium disilicide by chemical vapor deposition. A mixture of hydrogen, methyltrichlorosilane and titanium tetrachloride is introduced into a furnace containing a substrate such as graphite or silicon carbide. The thermal decomposition of the methyltrichlorosilane provides a silicon carbide matrix phase and the decomposition of the titanium tetrachloride provides a uniformly dispersed second phase of the intermetallic titanium disilicide within the matrix phase. The fracture toughness of the ceramic composite is in the range of about 6.5 to 7.0 MPa sqrt m which represents a significant increase over that of silicon carbide.

0777 Erosion-Resistant Nosetip Construction
A. R. Taverna
Department of the Air Force, Washington, DC
Filed 22 Aug 84 15p
PAT-APPL-6-643 140 Available from NTIS: price code A02
A pierced fabric carbon-carbon structure is selectively loaded with a particulate material to provide resistance to erosion. This invention relates to carbon-carbon composite materials, particularly reinforced carbon-carbon composites for reentry vehicle nosetips. Recent advances in the field of aerospace technology have created a need for high strength, temperature-resistant materials that possess the necessary properties needed to protect reentry vehicles from the severe thermomechanical stresses encountered within the reentry environment. A wide variety of reinforced, three-dimensional composite structures are now available. These composites generally consist of graphite fiber reinforcement which is oriented in at least three directions and a graphite matrix.

0778 Erosion-Resistant Nosetip Construction
A. R. Taverna, W. S. Thompson
Department of the Air Force, Washington, DC
Filed 22 Aug 84, patented 7 May 85 6p
PATENT-4 515 847 Available from Comm. of Patents
A pierced fabric carbon-carbon structure is selectively loaded with a particulate material to provide resistance to erosion.

Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055

0779 High Performance Mixed Bisimide Resins and Composites Based Thereon
J. A. Parker, A. H. Heimbuch, M. T. Hsu, T. S. Chen
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 4 Apr 85 25p
PAT-APPL-6-719 796 Available from NTIS: price code A02
The invention relates to mixed bismaleimide/biscitraconimide resins. Mixtures of the two resins produces materials which have better handling, processing or mechanical and thermal properties, particularly in graphite composites, than materials made with the individual resins. The mechanical strength of cured graphite composites prepared from a 1:1 copolymer of such bisimide resins is excellent at both ambient and elevated temperatures. The copolymer mixture provides improved composites which are lighter than metals and replace metals in many aerospace applications.

0780 Improved Process for the Preparation of Fiber-Reinforced Ceramic Composites by Chemical Vapor Deposition
W. J. Lackey, A. J. Caputo
Department of Energy, Washington, DC
Filed 7 Sep 84 24p
PAT-APPL-6-648 398 Available from NTIS: price code A02
A specially designed apparatus provides a steep thermal gradient across the thickness of fibrous preform. A flow of gaseous ceramic matrix material is directed into the fibrous preform at the cold surface. The deposition of the matrix occurs progressively from the hot surface of the fibrous preform toward the cold surface. Such deposition prevents the surface of the fibrous preform from becoming plugged. As a result thereof, the flow of reactant matrix gases into the uninfiltrated (undeposited) portion of the fibrous preform occurs throughout the deposition process. The progressive and continuous deposition of ceramic matrix within the fibrous preform provides for a significant reduction in process time over known chemical vapor deposition processes.

0781 Light Weight Fire Resistant Graphite Composites
D. A. Kourtides, J. A. Parker, M. T. S. Hsu
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 28 Feb 85 36p
PAT-APPL-6-706 682 Available from NTIS: price code A03
Composite structures with a honeycomb core and characterized by lightweight and excellent fire resistance are provided. These sandwich structures employ facesheets made up of bismaleimide-vinyl styrylpyridine copolymers with fiber reinforcement such as carbon fiber reinforcement. In preferred embodiments the facesheets are over-layered with a decorative film. The properties of these composites make them attractive materials of contruction for aircraft and spacecraft.

0782 Lightweight Piston
A. H. Taylor
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 2 May 85 13p
PAT-APPL-6-729 767 Available from NTIS: price code A02
A lightweight piston 12 composed of carbon-carbon composites is presented. The use of carbon-carbon composites over conventional materials, such as aluminum, reduces piston weight and improves thermal efficiency of the internal combustion reciprocation engine. Due to the negligible coefficient of thermal expansion and unique strength at elevated temperatures of carbon-carbon, the piston-to-cylinder wall 10 clearance is so small as to eliminate the necessity of piston rings. Use of the carbon-carbon composite piston has the effect of reducing the weight of other reciprocating

engine components allowing the piston to run at higher speeds and improving specific engine performance.

0783 Metallographic Preparation of Particulate Filled Aluminum Metal Matrix Composite Material
E. L. Goodwin
Department of the Army, Washington, DC
Filed 24 Jun 85 10p
PAT-APPL-6-747 741 Available from NTIS: price code A02
In accordance with this invention, a metallographic preparation method is disclosed for the preparation of particulate filled aluminum metal matrix composite material having approximately 25 percent silicon therein. The method includes first cutting the sample to size, mounting the sample in a plastic to provide a holder for the sample, then rough grinding the sample on a belt grinder, next fine grinding the sample on a multiplicity of different grit size silicon carbide paper, rough polishing the sample after fine grinding using a flat aluminum wheel wth nylon polishing cloth and diamond bort paste thereon and finally final polishing the sample using a 3-step final polishing procedure to produce a sample of fine quality which is ready for microscopic examination to determine quality and completeness of the polishing method.

0784 Prefabricated Panels for Rapidly Runway Repair and Expedient Airfield Surfacing
P. S. Springston, R. L. Claxton
Department of the Navy, Washington, DC
Filed 17 Jul 84 14p
PAT-APPL-6-631 954 Available from NTIS: price code A02
Low profile portable panels consisting of fiberglass-reinforced plastic composite mats which include hollow in-organic silica spheres in the plastic resin to reduce weight have recessed molded lips and bushings along all edges for connecting panels together with bolts to form expedient airfield surfacing and repair having high flexural strength and high structural capacity.

Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
See 0831

0785 Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
A. K. St. Clair, D. M. Stoakley, T. L. St.Clair, J. J. Singh
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 3 Nov 83, patented 9 Apr 85 7p
PATENT-4 510 277 Available from Comm. of Patents
A process for improving the moisture resistance properties of epoxidized TGMDA and DGEBA resin system by chemically incorporating chromium ions is described. The addition of chromium ions is believed to prevent the absorption of water molecules.

Production of Lead from Sulfides
See 0961

Rubber Modified Epoxy Adhesive
See 0750

0786 Silicon Carbide Whisker Reinforced Composites and Method for Making Same
G. C. Wei
Department of Energy, Washington, DC
Filed 9 Feb 84 17p
PAT-APPL-6-578 407 Available from NTIS: price code A02
The present invention is directed to the fabrication of ceramic composites which possess improved mechanical properties, especially increased fracture toughness. In the formation of these ceramic composites, the single-crystal SiC whiskers are mixed with fine ceramic powders of a ceramic material such as Al sub 2 O sub 3 , mullite, or B sub 4 C. The mixtures which contain a homogeneous dispersion of the SiC whiskers are hot pressed at pressures in a range of about 28 to 70 MPa and temperatures in the range of about 1600 to 1950 exp 0 C with pressing times varying from about 0.75 to 2.5 hours. The resulting ceramic composites show an increase in fracture toughness of up to about 9 MPa.m/sup 1/2/ which represents as much as a two-fold increase over that of the matrix material.

0787 Suspension Method of Impregnating Active Material into Composite Nickel Plaque
W. A. Ferrando
Department of the Navy, Washington, DC
Filed 29 May 85 18p
PAT-APPL-6-740 115 Available from NTIS: price code A02
A process for impregnating nickel or cadmium active material into a sintered nickel coated graphite fiber composite plaque electrode in which a suspension of 1-20 micron particles of active material in ethylene glycol in a 1:1 to 1:4 weight ratio of glycol to particles is gently worked into the plaque and the ethylene glycol is then evaporated off leaving the particles of active material distributed throughout the plaque. This procedure is repeated until the desired level of loading is achieved.

System for Rapid Repair of Damaged Airfield Runways
See 0836

Systems for Monitoring Changes in Elastic Stiffness in Composite Materials
See 0635

Thermal Barrier Coating System
See 0771

0788 Titanium Metal-Matrix Composites
P. R. Smith, F. H. Froes
Department of the Air Force, Washington, DC
Filed 22 Mar 83, patented 12 Feb 85 3p
PATENT-4 499 156 Available from Comm. of Patents
Titanium alloy composites having substantially reduced reaction zones are provided which comprise a high strength/high stiffness filament such as silicon carbide, silicon carbide-coated boron, boron carbide-coated boron and silicon-coated silicon carbide, embedded in a fine-grained titanium alloy containing at least 40 percent beta phase, less than 7 percent Al and having a beta-transus temperature below 175 F. (955 C). Also provided is a method for fabricating titanium composites which comprises mechanically working a desired titanium alloy to obtain sheetstock in a desired thickness and having a relatively fine grain size, laying up a preform and consolidating the preform under increased temperature and pressure, wherein consolidation is carried out at a temperature below the beta-transus temperature of the alloy, thereby reducing the amount of reaction zone between the filament and the alloy matrix.

0789 Transversely Reinforced Piezoelectric Composites
M. J. Haun, R. E. Newnham, W. E. Schulze
Department of the Navy, Washington, DC
Filed 21 Dec 84 18p
PAT-APPL-6-684 529 Available from NTIS: price code A02
This patent application discloses piezoelectric PZT-polymer composites of 1-3 and 1-3-0 connectivity which are transversely reinforced with glass fibers to increase the hydrostatic piezoelectric charge and voltage coefficients for possible use in hydrophone applications. These composites consisted of a foamed (with porosity) polymer matrix with PZT rods aligned to the poling direction and glass fibers in the remaining two transverse directions. Because of the small percentage of PZT required, these composites have densities near that of water, and much lower dielectric constants than solid PZT, resulting in large increases in the hydrostatic piezoelectric voltage coefficient. By increasing these two coefficients their product, used as the figure of merit, is greatly enhanced.

MATERIALS: Fibers & Textiles

0790 Abrasion-Resistant Durable-Press Acrylic Finishes for Cotton Textiles by Use of Nonoxidative Polymerization Initiators and Accelerators in Two-Stage Heat Curing
C. M. Welch
Department of Agriculture, Washington, DC
Filed 29 Jul 83, patented 20 Nov 84 17p
PATENT-4 483 689 Available from Comm. of Patents
The use of 4,4'-azobis(4-cyanovaleric acid) and its salts as water-soluble free radical initiators, and simultaneously or alternatively the addition of catalytic amounts of tetrakis(hydroxymethyl)phosphonium sulfate as a polymerization accelerator, in the sequential polymerization and acid-catalyzed grafting of N-methylolacrylamide on cotton textiles from a single treating bath in a padding and two-stage heat curing operation, is disclosed. The cotton textiles as treated are free from discoloration and excessive tendering produced by peroxide-type initiators, and these textiles exhibit increased smooth drying performance, abrasion resistance and strength relative to textiles treated conventionally with dimethyloldihydroxyethyleneurea to comparable wrinkle recovery angles.

Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662

Fluorination by Inorganic Fluorides in Glow Discharge
See 0760

0791 Mild-Cure Formaldehyde-Free Durable-Press Finishing of Cotton Textiles with Glyoxal and Glycols
C. M. Welch
Department of Agriculture, Washington, DC
Filed 26 Aug 83, patented 18 Sep 84 8p
PATENT-4 472 167 Available from Comm. of Patents
The use of glycols as coreactive additives with glyoxal in the aluminum sulfate-catalyzed crosslinking of cotton cellulose in the presence of alpha-hydroxy acids as catalyst activators at moderate curing temperatures is disclosed. The cotton textiles so treated are free from the discoloration and excessive tendering produced by glyoxal in the presence of metal salt catalysts at high temperature, are nonnitrogenous and formaldehyde-free, and exhibit high levels of wrinkle resistance and smooth drying properties without the formaldehyde release characteristic of N-methylolamide finishing agents.

0792 Process to Impart Smooth-Dry and Flame Retardant Properties to Synthetic-Cellulosic Blended Fabrics
R. J. Harper
Department of Agriculture, Washington, DC
Filed 28 Jun 85 18p
PAT-APPL-6-749 905 Available from NTIS: price code A02
Synthetic-cellulosic blended fabric is padded with a solution of nitrogen rich N-methylol crosslinking agent, acid catalyst, antimony oxide and a halogen containing alcohol; dried at about 140 -190F and then cured at about 250-400F for sufficient time to impart smooth-dry and flame retardant properties to the fabric. Aqueous polyethylene or silicone emulsion softeners can be added to the padding solution if desired. Dibromoneopentyl glycol makes an exemplary halogen containing alcohol. The process can be varied to first pad with antimony oxide, dry, and then repad with a solution of: nitrogen rich N-methylol crosslinking agent, acid catalyst, and a halogen containing alcohol, dry again and cure, at the above specified temperatures.

0793 Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
B. K. Andrews, R. M. Reinhardt
Department of Agriculture, Washington, DC
Filed 8 Aug 84 36p
PAT-APPL-6-638 827 Available from NTIS: price code A03
This invention relates to textile finishes that have low formaldehyde release characteristics.

0794 Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
B. K. Andrews, R. M. Reinhardt
Department of Agriculture, Washington, DC
Filed 6 Mar 84, patented 18 Dec 84 18p
PATENT-4 488 878 Available from Comm. of Patents
Hydroxymethylated organic carbamates are reacted with water soluble alcohols to produce etherified hydroxymethylated carbamates which are used with an acid catalyst to treat cellulosic textiles for sufficient time and temperature to produce a durable press low formaldehyde release cellulosic textile. Carbamates from the group consisting of alkyl or alkoxyalkyl carbamates of less than six carbons can be used. Water soluble aliphatic monohydric and polyhydric alcohols of one to six carbons are also satisfactory. This invention provides: a process to produce cellulosic textiles with durable press properties and low formaldehyde release and the products produced in accordance with said process.

0795 Temperature Adaptable Textile Fibers and Method of Preparing Same
T. L. Vigo, C. M. Frost
Department of Agriculture, Washington, DC
Filed 2 Jul 84 31p
PAT-APPL-6-626 850 Available from NTIS: price code A03
Temperature-adaptable textile fibers are provided which store heat when the temperature rises and release heat when the temperature decreases, in which phase-change or plastic crystalline materials are filled within hollow fibers, or impregnated upon non-hollow fibers. The resultant prod-

uct is a modified fiber which is temperature adaptable in both hot and cold environments for as many as 150 heating and cooling cycles, by releasing heat when the temperature drops, and storing heat when the temperature rises. As such, fabrics made from such fibers may be used to protect plants and animals, may be incorporated in protective clothing, and generally speaking may be employed in environments where temperature fluctuations need to be minimized.

MATERIALS: Metals

0796 Alloys and Method of Making
D. W. Forester
Department of the Navy, Washington, DC
Filed 10 Nov 82, patented 4 Sep 84 6p
PATENT-4 469 536 Available from Comm. of Patents
Novel alloys composed of two immiscible metals are made by vapor-depositing the metals simultaneously onto a suitable substrate. By way of example, alloys of iron and bismuth or cobalt and bismuth may be produced according to this invention. Many of the novel alloys have useful ferromagnetic and magneto-optical properties.

0797 Aluminum Battery Alloys
D. S. Thompson, D. H. Scott
Department of Energy, Washington, DC
Filed 28 Sep 84 25p
PAT-APPL-6-655 486 Available from NTIS: price code A02
Aluminum alloys suitable for use as anode structures in electrochemical cells are disclosed. These alloys include iron levels higher than previously felt possible, due to the presence of controlled amounts of manganese, with possible additions of magnesium and controlled amounts of gallium.

0798 Aluminum-Stabilized Nb sub 3 Sn Superconductor
R. M. Scanlan
Department of Energy, Washington, DC
Filed 10 Feb 84 13p
PAT-APPL-6-578 897 Available from NTIS: price code A02
This patent discloses an aluminum-stabilized Nb sub 3 Sn superconductor and process for producing same, utilizing ultrapure aluminum. Ductile components are co-drawn with aluminum to produce a conductor suitable for winding magnets. After winding, the conductor is heated to convert it to the brittle Nb sub 3 Sn superconductor phase, using a temperature high enough to perform the transformation but still below the melting point of the aluminum. This results in reaction of substantially all of the niobium, while providing stabilization and react-in-place features which are beneficial in the fabrication of magnets utilizing superconducting materials.

Attachment Method-Ceramic Radome to Metal Body
See 0699

0799 Corrosion Inhibitor Formulation for Molybdenum, Tungsten and Other Metals
M. R. Palmer
Department of the Air Force, Washington, DC
Filed 27 Nov 84 16p
PAT-APPL-6-675 115 Available from NTIS: price code A02
In this patent application, the corrosion of molybdenum metal surfaces which come in contact with water-coolant systems is inhibited by the addition of a small amount of a composition containing a combination of a triazole inhibitor, a biocide and a buffering agent. A corrosion inhibiting composition containing benzotriazole as the inhibitor and benzoic acid as both a biocide and buffer proved to be especially effective in preventing the corrosion of molybdenum, tungsten and other metals.

0800 Corrosion Resistant Coating
S. K. Khanna, A. P. Thakoor, R. M. Williams
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 30 Sep 83, patented 11 Jun 85 8p
PATENT-4 522 844 Available from Comm. of Patents
A method of coating a substrate with an amorphous metal is described. A solid piece of the metal is bombarded with ions of an inert gas in the presence of a magnetic field to provide a vapor of the metal which is deposited on the substrate at a sufficiently low gas pressure so that there is formed on the substrate a thin, uniformly thick, essentially pinhole-free film of the metal.

0801 Ductile Duplex Iron-Based Alloy Containing Aluminum
L. L. Oden, J. S. Dunning
Department of the Interior, Washington, DC
Filed 6 Feb 84, patented 12 Feb 85 3p
PATENT-4 498 928 Available from Comm. of Patents
A two-phase ductile iron-based alloy which is resistant to oxidation and sulfidation at high temperatures is disclosed. The alloy contains from about 8 to 20 wt % of Cr; about 6 to 30 wt % of Ni; about 3 to 11.5 wt % of Al; and 0 to 2 wt % of Mo; about 0 to 1 wt % of Si; about 0 to 2 wt % of Mn; about 0 to 0.1 wt % of C; about 0 to 0.2 wt % of S; about 0 to 0.02 wt % of P; about 0 to 1 wt % of Ti; about 0 to 2 wt % of Nb and Ta; and the balance of Fe. The atomic ratio of nickel to aluminum is between 0.8 and 1.2.

Electrically Conductive Containment Vessel for Molten Aluminum
See 0141

High Resolution In situ Ultrasonic Corrosion Monitor
See 0553

0802 Lithium Purification Technique
R. F. Keough, G. E. Meadows
Department of Energy, Washington, DC
Filed 10 Jan 84 8p
PAT-APPL-6-569 698 Available from NTIS: price code A02
A method for purifying liquid lithium to remove unwanted quantities of nitrogen or aluminum. The method involves precipitation of aluminum nitride by adding a reagent to the liquid lithium. The reagent will be either nitrogen or aluminum in a quantity adequate to react with the unwanted quantity of the impurity to form insoluble aluminum nitride. The aluminum nitride can be mechanically separated from the molten liquid lithium.

0803 Long Range Ordered Alloys Modified by Addition of Niobium and Cerium
C. T. Liu
Department of Energy, Washington, DC
Filed 22 Aug 84 15p
PAT-APPL-6-643 209 Available from NTIS: price code A02
Long range ordered alloys are described having the nominal composition (Fe,Ni,Co) sub 3 (V,M) where M is a ductility enhancing metal selected from the group Ti, Zr, Hf with

additions of small amounts of cerium and niobium to dramatically enhance the creep properties of the resulting alloys.

Low Temperature Deposition of Nickel Films
See 0709

0804 Manufacturing Process to Reduce Large Grain Growth in Zirconium Alloys
P. M. Rosecrans
Department of Energy, Washington, DC
Filed 1 Aug 84 11p
PAT-APPL-6-636 659 Available from NTIS: price code A02
It is an object of the present invention to provide a procedure for desensitizing zirconium-based alloys to large grain growth (LGG) during thermal treatment above the recrystallization temperature of the alloy. It is a further object of the present invention to provide a method for treating zirconium-based alloys which have been cold-worked in the range of 2 to 8% strain to reduce large grain growth. It is another object of the present invention to provide a method for fabricating a zirconium alloy clad nuclear fuel element wherein the zirconium clad is resistant to large grain growth.

0805 Metallic Glass Composition
D. M. Kroeger, C. C. Koch
Department of Energy, Washington, DC
Filed 14 Sep 84 11p
PAT-APPL-6-650 464 Available from NTIS: price code A02
This patent pertains to a metallic glass alloy that is either iron-based or nickel-based or based on a mixture of iron and nickel, containing lesser amounts of elements selected from the group boron, silicon, carbon and phosphorous to which is added an amount of a ductility-enhancing element selected from the group cerium, lanthanum, praseodymium and neodymium sufficient to increase ductility of the metallic glass upon annealing.

0806 Method and Apparatus for Conducting Variable Thickness Vapor Deposition
G. V. Nesslage
Department of Energy, Washington, DC
Filed 3 Aug 84 12p
PAT-APPL-6-637 629 Available from NTIS: price code A02
A method of vapor depositing metal on a substrate in variable thickness comprises conducting the deposition continuously without interruption to avoid formation of grain boundaries. To achieve reduced deposition in specific regions a thin wire or ribbon blocking body is placed between source and substrate to partially block vapors from depositing in the region immediately below.

Method for Continuously Casting
See 0712

0807 Method for Making Alloy Additions to Base Metals Having Higher Melting Points
H. B. Bomberger
Department of the Air Force, Washington, DC
Filed 15 Aug 84 8p
PAT-APPL-6-640 916 Available from NTIS: price code A02
This abstract discloses a method for adding alloying elements having relatively low boiling points to base metals having relatively high melting points. The base metal is combined with the melting point-lowering metal; or metalloid and to this mixture is added the desired alloying element or elements. No special equipment is required for this method. The first metals included within the scope of this invention are selected from the group consisting of Ba, Ca, Li, Mg and Zn. Each of these metals has a relatively low boiling point and, with the exception of Zn, a relatively low density. The more refractory base metals included within the scope of this invention are selected from the group consisting of Groups IB, IVB, VB, VIB and VIIII of the Periodic Table of the Elements. Of particular interest are Cu from IB, Ti and Zr from IVB, Nb and Ta from VB, Cr and W from VIB and Fe, Co and Ni from VIII.

0808 Method for Preparing High Purity Vanadium
F. Schmidt, O. N. Carlson
Department of Energy, Washington, DC
Filed 16 May 84 23p
PAT-APPL-6-610 905 Available from NTIS: price code A02
A method for preparing high purity vanadium having a low silicon content has been developed. Vanadium pentoxide is reduced with a stoichiometric, or slightly deficient amount of aluminum to produce a vanadium-aluminum alloy containing an excess of oxygen. Silicon is removed by electron-beam melting the alloy under oxidizing conditions to promote the formation of SiO which is volatile at elevated temperatures. Excess oxygen is removed by heating the alloy in the presence of calcium metal to form calcium oxide.

0809 Method for Refining Microstructures of Cast Titanium Articles
D. Eylon, F. H. Froes
Department of the Air Force, Washington, DC
Filed 27 Jan 84, patented 13 Nov 84 7p
PATENT-4 482 398 Available from Comm. of Patents
The microstructure of titanium alloy castings is improved by a process which comprises beta-solution heat treating the cast article at or near the beta-transus temperature of the alloy, cooling the article to room temperature at a rate in excess of air cooling and aging the article at a temperature about 0.8 to 0.9 of the beta-transus.

0810 Method of Precisely Modifying Predetermined Surface Layers of a Workpiece by Cluster Ion Impact Therewith
L. Friedman, R. J. Beuhler, M. W. Matthew, M. Ledbetter
Department of Energy, Washington, DC
Filed 25 Jun 84 49p
PAT-APPL-6-623 874 Available from NTIS: price code A03
A method of precisely modifying a selected area of a workpiece by producing a beam of charged cluster ions that is narrowly mass selected to a predetermined mean size of cluster ions within a range of 25 to 10 exp 6 atoms per cluster ion, and accelerated in a beam to a critical velocity. The accelerated beam is used to impact a selected area of an outer surface of the workpiece at a preselected rate of impacts of cluster ions/cm exp 2 /sec in order to effect a precise modification in that selected area of the workpiece.

0811 Nitriding of Super Alloys for Enhancing Physical Properties
A. Purohit
Department of Energy, Washington, DC
Filed 25 Jun 84 16p
PAT-APPL-6-624 085 Available from NTIS: price code A02
The invention teaches the improvement of certain super alloys by exposing the alloy to an atmosphere of elemental

nitrogen at elevated temperatures in excess of 750 deg 0 C but less than 1150 deg 0 C for an extended duration, viz., by nitriding the surface of the alloy, to establish barrier nitrides of the order of 25 to 100 micrometers thickness. These barrier nitrides appear to shield the available oxidizing metallic species of the alloy for up to a sixfold improved resistance against oxidation and also appear to impede egress of surface dislocations for increased fatigue and creep strengths.

Non-Carbon Induction Furnace
See 0420

0812 Optimizing Hot Workability and Controlling Microstructures in Difficult to Process High Strength and High Temperature Materials
H. L. Gegel
Department of the Air Force, Washington, DC
Filed 6 Feb 85 65p
PAT-APPL-6-698 728 Available from NTIS: price code A04

An improved hot forming method for metals, alloys and the like, and in particular, for difficult to process high strength and high temperature metals and alloys of particular use in aerospace applications, is described, which comprises the steps of generating flow stress data as a function of strain rate and temperature on samples of the material at predetermined strain within predetermined ranges of temperature and strain rate; determining from that data the strain rate sensitivity and power dissipation efficiency of the material within the ranges of temperature and strain rate represented by the generated data; selecting values of strain rate and corresponding temperature for a selection value of the dissipation efficiency for the material; and hot forming the material at the selected strain rate and temperature values to a predetermined shape. The improved method may be of particular application to forging, extrusion, rolling or other hot forming process appropriate for titanium, aluminum, nickel, cobalt, copper, iron, zirconium and their alloys. A processing map for hot forming each metal or alloy may be generated according to the methods taught.

0813 Passivation of Steel with Aqueous Amine Solutions
P. J. Hearst
Department of the Navy, Washington, DC
Filed 3 May 85 13p
PAT-APPL-6-729 849 Available from NTIS: price code A02

This is a process that allows previously cleaned steel (which may have been cleaned in any of several different ways) to be passivated with a rinse of almost pure water, that is made slightly alkaline to inhibit corrosion, and flash rusting such that any small residue remaining of the steel surface after drying of the water will itself evaporate and in such a manner that any remaining residue will be incorporated into a subsequently applied non-aqueous protective coating without leaving any water-soluble or ionic residue on the surface of the steel that will cause corrosion or affect adhesion of the protective coating.

Photoionization Technique for Growth of Metallic Films
See 0719

0814 Porous Metallic Bodies
R. L. Landingham
Department of Energy, Washington, DC.*Department of Energy, Washington, DC
Filed 13 Mar 84 16p
PAT-APPL-6-589 255 Available from NTIS: price code A02

Porous metallic bodies having a substantially uniform pore size of less than about 200 microns and a density of less than about 25 percent theoretical, as well as the method for making them, are disclosed. Group IIA, IIIB, IVB, VB, and rare earth metal hydrides are heated in a confining container at a controlled rate to a temperature of about greater than the temperature at which the hydride decomposes. Hydrogen is removed from the container and the remaining metal is heated during a second stage to a temperature greater than the temperature at which it was previously heated but not greater than the temperature of 1/2 to 2/3 the temperature at which the metal melts at a controlled rate. The resulting porous metallic body produced has a density less than about 25 percent theoretical and a pore size of less than about 200 microns. The metallic particles of the present invention have high inner surface area and possess minimum resistance to gas flow.

Process for Producing Carbide Coatings
See 0767

0815 Process to Produce Fine Line Metallic Collection Patterns on Semiconductors Devices
B. D. Gallagher
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 20 Dec 84 13p
PAT-APPL-6-648 185 Available from NTIS: price code A02

A method is described for forming thin conductive metal lines on a nonmetallic substrate. A metallizable compound is applied to the substrate in a substantially uniform thin film. Heating radiation is applied to the film along a plurality of separated fine lines, but not to the area between the lines, to heat the film along said lines to a temperature at which the metallizable compound is converted to a metal and gases that drift away. A solvent is then applied to the film to wash away the areas that have not been metallized.

Production of Lead from Sulfides
See 0961

Remote Temperature-Set-Point Controller
See 0619

0816 Rusty Bolt Intermodulation Interference Reducer
R. Panayappan, J. C. Cooper
Department of the Navy, Washington, DC
Filed 12 Apr 85 13p
PAT-APPL-6-722 579 Available from NTIS: price code A02

In the preferred embodiment of the invention about 20 percent by weight of copper-pyrrolidine-chloride, about 5 percent by weight of polyvinyl pyrrodlidinone, and about 75 percent by weight of ethylene gylcol are mixed to form a viscious green solution which can be applied to metal surfaces by any common means, preferably painting or spraying. The chelating functional groups in PVP and pyrrolidine incorporate the metal of the metal oxide into their structure thus removing the metal oxide from the MOM junction. The PVP is cross-linked by metal ions removed from the metal oxide thus producing a structurally strong, hard material

that sets in place and remains there to provide structural integrity at the junction. The PVP is also a mild reducing agent which prevents future oxidative or electrolytic corrosion.

0817 Wear Improvement in Titanium Alloys by Ion Implantation
R. G. Vardiman
Department of the Navy, Washington, DC
Filed 3 Oct 84 13p
PAT-APPL-6-657 115 Available from NTIS: price code A02
This patent application discloses a method for making titanium alloy more resistant to sliding wear and fretting fatigue comprising the steps of: implanting carbon ions with at least one energy onto titanium alloy until at least 1 x 10 to the 17th power carbon ions/sq.cm. have fallen onto the titanium alloy, said energy level of carbon ions being implanted being greater than 10 KeV. A second method comprises an additional step of heating the implanted titanium alloy to between 300 C and 500 C for .5 hours to 2 hours. The second method has a lower number of carbon ions/sq. cm. implanted onto the titanium.

MATERIALS: Plastics & Elastomers

Attachment Method-Ceramic Radome to Metal Body
See 0699

0818 Chemical Control of Nadimide Cure Temperature and Rate
R. W. Lauver
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 22 Jul 83, patented 30 Apr 85 9p
PATENT-4 514 557 Available from Comm. of Patents
Polyimide resins suitable for use as composite matrix materials are formed by copolymerization of maleic and norbornenyl endcapped monomers and oligomers. The copolymers can be cured at temperatures under about 300 C by controlling the available concentration of the maleic endcapped reactant. This control can be achieved by adding sufficient amounts of said maleic reactant, or by chemical modification of either copolymer, so as to either increase Diels-Alder retrogression of the norbornenyl capped reactant and/or holding initiation and polymerization to a rate compatible with the availability of the maleic-capped reactant.

0819 Composition and Method for Cleaning Embedded Soil from Surfaces Having Low Gloss Coatings
K. G. Clark
Department of the Navy, Washington, DC
Filed 11 Apr 84 7p
PAT-APPL-6-600 876 Available from NTIS: price code A02
A composition for cleaning embedded soil from surfaces coated with flat or low-gloss coatings has elastomeric particles intermixed with a thixotropic solvent emulsion cleaner. The elastomeric particles provide an eraser-like action to absorb deeply entrapped soil so that the cleaner can emulsify or dissolve the soil and wash it away.

Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
See 0051

Elastomer Toughened Polyimide Adhesives
See 0743

0820 Electrically Conductive Doped Block Copolymer of Polyacetylene and Polyisoprene
M. Aldissi
Department of Energy, Washington, DC
Filed 27 Jun 84 9p
PAT-APPL-6-625 323 Available from NTIS: price code A02
An electrically conductive block copolymer of polyisoprene and polyacetylene and a method of making the same are disclosed. The polymer is prepared by first polymerizing isoprene with n-butyllithium in a toluene solution to form an active isoprenyllithium polymer. The active polymer is reacted with an equimolar amount of titanium butoxide and subsequently exposed to gaseous acetylene. A block copolymer of polyisoprene and polyacetylene is formed. The copolymer is soluble in common solvents and may be doped with I sub 2 to give it an electrical conductivity in the metallic regime.

0821 Electron-Donor Dopant, Method of Improving Conductivity of Polymers by Doping Therewith, and a Polymer So Treated
R. Liepins, M. Aldissi
Department of Energy, Washington, DC
Filed 27 Jul 84 18p
PAT-APPL-6-535 020 Available from NTIS: price code A02
Polymers with conjugated backbones, both polyacetylene and polyaromatic heterocyclic types, are doped with electron-donor agents to increase their electrical conductivity. The electron-donor agents are either electride dopants made in the presence of lithium or dopants derived from alkalides made in the presence of lithium. The dopants also contain a metal such as cesium and a trapping agent such as a crown ether.

0822 Epoxy Phthalonitrile Polymers
T. M. Keller
Department of the Navy, Washington, DC
Filed 28 Jun 85 15p
PAT-APPL-6-749 705 Available from NTIS: price code A02
A bisorthodinitrile monomer and an epoxy monomer are mixed with or without an amine curing agent and heated to a temperature sufficient to induce polymerization. The resulting epoxy-phthalonitrile copolymer has improved properties relative to the epoxy polymers including higher thermal and oxidative stability, higher glass transition temperatures, better shelf life, lower water absorptivity, and better electrical properties. The properties of the epoxy-phthalonitrile copolymer can be varied by varying the epoxy:phthalonitrile ratio.

0823 Fire and Heat Resistant Laminating Resins Based on Maleimido and Citraconimido Substituted 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diaminobenzenes
J. A. Mikroyannidis, D. A. Kourtides
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 16 Aug 84 30p
PAT-APPL-6-641 147 Available from NTIS: price code A03
A novel class of fire and heat resistant bisimide resins prepared by thermal polymerization of maleimido or citraconimido substituted 1-(dialkox phosphonyl)methyl-2-4 and -2,6-diamino benzene was presented. The polymer precursors are prepared by reacting 1-(diorgano

oxyphosphonyl)methyl-2-4- and -2,6-diamino benzenes with maleic anhydride or citraconic anhydride in a mole ratio 1:2. Chain extension of the monomers is achieved by reacting the mono-N-maleimido derivaties of 1-(diorgano oxyphosphonyl)methyl-2,4 and -2,6-diaminobenzenes with aryl tetracarboxylic dianhydrides, such as benzophenone tetracarboxylic dianhydride, or aryl diisocyanates, such as methylenebis (4-phenylisocyanate), in a mole ratio 2:1. The polymerization of the monomers is studies by differential scanning calorimetry (DSC) and the thermal stability of the polymers is ascertained by thermogravimetric analysis (TGA).

0824 Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
J. A. Mikroyannidis, D. A. Kourtides
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 16 Aug 84 22p
PAT-APPL-6-641 153 Available from NTIS: price code A02
The 1-(diorgano oxyphosphonyl)methyl-2,4 and -2,6-diamino benzenes are reacted with polyacylhalides and optionally comonomers to produce polyamides which have desirable heat and fire resistance properties. These polymers are used to form fibers and fabrics where fire and flame resistance properties are important, like aircraft equipment and structures.

Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055

0825 Fire-Resistant Phosphorus Containing Polyimides and Copolyimides
J. A. Mikroyannidis
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 16 Aug 84, patented 20 Aug 85 12p
PATENT-4 536 565 Available from Comm. of Patents
Phosphorus-containing polyimides and copolyimides are synthesized in a two-step polycondensation reaction from 1- (diorganooxyphosphonl)methly 2,4- and 2,6-diaminobenzenes and tetracarboxylic anhydride. The diorgano position of the diorganooxyphosphonyl group includes alkyl, such as ethyl, substituted alkyl, such as 2-chloroethyl, and aryl such as phenyl. The tetracarboxylic anhydries include compounds such as pyrometallitic dianhydride and benzophenone tetracarboxylic dianhydride. The glass transition temperature (Tg) of the polyimides is reduced by incorporation of the (dialkoxyphosphonyl)methyl groups. The phosphorus-containing copolyimides show a considerably higher degree of fire-resistance as compared to that of the corresponding common polyimides.

Fluorinated Diacrylic Esters
See 0744

0826 Fluorinated Polyesters
T. M. Keller
Department of the Navy, Washington, DC
Filed 20 Dec 83, patented 13 Nov 84 6p
PATENT-4 482 702 Available from Comm. of Patents
It is an object of this invention to produce a relatively inexpensive low surface energy polymer. It is another object of this invention to produce a polymer which is not highly fluorinated yet has a low surface energy. It is a further object of this invention to produce a polyester prepolymer from a tertiary fluorinated alcohol and a carboxylic acid. It is yet another object of this invention to provide new flourine containing polyester prepolymers terminated with both dicarboxylic acid chlorides and dihydroxyl groups. These and other objects are achieved by reacting a fluorinated alcohol, preferably tertiary, with a carboxylic acid having no fluorination on the alpha carbon.

0827 Fluorinated Polyurethanes
T. M. Keller
Department of the Navy, Washington, DC
Filed 20 Apr 84, patented 16 Oct 84 5p
PATENT-4 477 643 Available from Comm. of Patents
Novel polymers and prepolymers are formed by reacting a fluorinated tertiary polyfunctional alcohol with an aliphatic diisocyanate or a biuret derivative of said diisocyanate in the presence of a suitable catalyst and in the absence of solvent. The novel polymers and prepolymers exhibit low surface energy properties and may be used in non-fouling coatings, foams and elastomers.

Hot Melt Adhesive Attachment Pad
See 0745

Laminated Thermoplastic Radome
See 0197

0828 Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
B. N. Achar, G. M. Fohlen, J. A. Parker
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 11 Apr 84 17p
PAT-APPL-6-598 777 Available from NTIS: price code A02
Metal, preferably divalent copper, cobalt or nickel, phthalocyanine tetraamines are used as curing agents for epoxides. The resulting copolymers have high thermal and chemical resistance and are homogeneous. They are useful as binders for laminates, e.g., graphite cloth laminate.

Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057

Method for Making Heterocyclic Block Copolymers
See 0060

Method of Synthesizing Polymers from a Solid Electrolyte
See 0062

Oxidation Protection Coatings for Polymers
See 0764

Phenoxy Resins Containing Pendent Ethynyl Groups and Cured Resins Obtained Therefrom
See 0066

Phosphorus-Containing Imide Resins
See 0067

0829 Piezoelectric Transducer Using Electrically Poled Gamma-Phase Nylon 11
B. A. Newman, K. D. Pae, J. I. Scheinbeim
Department of the Navy, Washington, DC
Filed 26 Oct 81, patented 4 Dec 84 5p
PATENT-4 486 683 Available from Comm. of Patents
Nylon 11 (gamma phase) is electrically poled after it is crystallized from commercially available nylon 11 by rapidly crystallizing it from the molten state. The gamma-phase nylon 11 so obtained exhibits high piezoelectric properties when poled under different poling conditions at different

temperatures. The electrically poled gamma-phase nylon 11 is used in a transducer.

Polyaromatic Ether-Sulfone-Keytones with Fluoro-Substituted-P-Cyclophane Units as Cross-Linking Sites
See 0071

0830 Polysilane Positive Photoresist Materials and Methods for Their Use
L. A. Harrah, J. M. Zeigler
Department of Energy, Washington, DC
Filed 5 Apr 84 37p
PAT-APPL-6-597 005 Available from NTIS: price code A03
New polysilane copolymers comprise recurring units of -Si(X)(Y)- and Si(A) (B)-, Si(X)(Y) being different from Si(A)(B). X and Y together have 1 to 13 carbon atoms, and X and Y each independently is hydrogen, alkyl, cycloalkyl, phenyl, alkylphenyl, or phenylalkyl, with the proviso that only one of X and Y contains a phenyl moiety, or together X and Y are an alkylene group forming a ring with the adjoining Si atom. A and B together have 3 to 13 carbon atoms, and A and B each independently is alkyl or cycloalkyl, with the proviso that when one of A and B is ethyl, the other is not methyl or ethyl, and that when one of A and B is n-propyl and the other is methyl, X and Y are not both methyl. Corresponding homopolysilanes are also provided. Upon ultraviolet irradiation, they photodepolymerize to form volatile products. As a result, they represent a new class of photoresists which enable direct formation of a positive image eliminating the heretofore required development step.

0831 Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
D. M. Stoakley, A. K. St Clair
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 3 Nov 83, patented 25 Sep 84 8p
PATENT-4 473 674 Available from Comm. of Patents
A resin product useful as an adhesive, composite or casting resin is described as well as the process used in its preparation to improve its flexural strength mechanical property characteristics. Improved flexural strength is attained with little or no change in density, thermal stability or moisture resistance by chemically incorporating 1.2% to 10.6% by weight Co(3) ions in an epoxidized resin system.

Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785

Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766

0832 Process for Preparing Solvent Resistant, Thermoplastic Aromatic Poly(Imidesulfone)
T. L. St. Clair, D. A. Yamaki
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 6 May 83, patented 18 Dec 84 6p
PATENT-4 489 027 Available from Comm. of Patents
A process for preparing a thermoplastic poly(midesulfone) is disclosed. This resulting material has thermoplastic properties which are generally associated with polysulfones but not polyimides, and solvent resistant which is generally associated with polyimides but not polysulfones. This system is processable in the 250 to 350 C range for molding, adhesive and laminating applications. This unique thermoplastic poly(imidesulfone) is obtained by incorporating an aromatic sulfone moiety into the backbone of an aromatic linear polyimide by dissolving a quantity of a 3,3',4,4'-benzophenonetetracarboxylic dianhydride (BTDA) in a solution of 3,3'-diaminodiphenylsulfone and bis(2-methoxyethyl)ether, precipitating the reactant product in water, filtering and drying the recovered poly(amide-acid sulfone) and converting it to the poly(imidesulfone) by heating.

0833 Processable and Stable Conductive Polymers
T. M. Keller
Department of the Navy, Washington, DC
Filed 9 Jan 85 22p
PAT-APPL-6-690 015 Available from NTIS: price code A02
This patent application pertains to processable and stable conductive polymers. An object of the present invention is to provide a non-doped, conductive organic polymer having sufficient structural strength and thermal stability to replace conductive materials, particularly metals. Another object of this invention is to develop this polymer from an easily processable, potentially low-cost phthalonitrile monomer. Another object of this invention is to convert this polymer into a highly conductive material by thermal means. Another object of this invention is to provide a polymer that can be made to conduct through the range from insulator to semiconductor to highly conductive materials by varying the temperature at which polymerization occurs. These and other objects of the invention are achieved by polymerizing diether-linked bisorthodinitrile monomers with an amine curing agent at temperatures between the melting point of the monomers and thermal decomposition point for the polymers. The conductivity of the resulting polymer is increased linearly as a function of the polymerization temperature.

0834 Radiation-Hardened Polymeric Films
C. Arnold, R. C. Hughes, R. G. Kepler, S. R. Kurtz
Department of Energy, Washington, DC
Filed 16 Jul 84 17p
PAT-APPL-6-632 347 Available from NTIS: price code A02
The radiation-induced conductivity of polymeric dielectrics with low electronic mobility is reduced by doping with electron donor or electron acceptor compounds at a level of 10 exp 15 to 10 exp 21 molecules of dopant/cm exp 3 . Polyesters, polyolefins, perfluoropolyolefins, vinyl polymers, vinylidene polymers, polycarbonates, polysulfones and polyimides can benefit from such a treatment. Usable dopants include 2,4,7-trinitro-9-fluorenone, tetracyanethylene, 7,7,8,8-tetracyanoquinodimethane, m-dinitrobenzene, 2-isopropylcarbazole, and triphenylamine.

0835 Rigid Zeolite Containing Polyurethane Foams
C. B. Frost
Department of Energy, Washington, DC
Filed 18 May 84 23p
PAT-APPL-6-611 772 Available from NTIS: price code A02
A closed cell rigid polyurethane foam has been prepared which contains up to about 60% by weight of molecular sieves capable of sorbing molecules with effective critical diameters of up to about 10 A. The molecular sieve component of the foam can be preloaded with catalysts or with reactive compounds that can be released upon activation of the foam to control and complete crosslinking after the foam is formed. The foam can also be loaded with water or other flame-retarding agents, after completion. Up to about

50% of the weight of the isocyanate component of the foam can be replaced by polyimide resin precursors for incorporation into the final polymeric network.

Rubber Modified Epoxy Adhesive
See 0750

Synthesis of Arylene Siloxanylene Polymers and Copolymers
See 0084

0836 System for Rapid Repair of Damaged Airfield Runways
P. S. Springston
Department of the Navy, Washington, DC
Filed 27 Oct 82, patented 13 Sep 83 5p
PATENT-4 404 244 Available from Comm. of Patents
A membrane of fiberglass-reinforced polyester resin is used as a trafficable cover over a compacted backfilled crater and crushed stone base to impart strength to the repair and prevent foreign object damage to aircraft. The membrane cover is usually prefabricated from several fiberglass matting layers of chopped fiberglass strands chemically bonded to woven fiberglass roving and impregnated with a polyester resin; an anchoring system consisting of holes along the cover perimeter and torque set rock bolts are used in conjunction with special steel bushings to secure the cover to airfield pavement surrounding the crater.

0837 Thermally Stable Thermoset Resin Compositions
B. A. Reinhardt
Department of the Air Force, Washington, DC
Filed 25 Jul 84 17p
PAT-APPL-6-634 345 Available from NTIS: price code A02
The present invention provides novel thermally stable resins based on an arylether compound having terminal phenylethynyl groups. The resins are cured by heating, either in air or under an inert atmosphere such as argon, nitrogen, or the like. The compositions are particularly suitable for use in the fabrication of reinforced composite structures and for use as high temperature adhesives and coatings.

0838 Thermoset-Thermoplastic Aromatic Polyamide Containing n-Propargyl Groups
T. L. St. Clair, J. F. Wolfe, T. D. Greenwood
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 23 Oct 80, patented 26 Jul 83 5p
PATENT-4 395 540 Available from Comm. of Patents
A composition and method are disclosed for increasing the use temperature of polyamides based on the incorporation of a latent crosslinking agent into the polymer backbone, wherein high temperature performance is achieved without sacrificing solubility or processability.

Thermosetting Arylether Compounds and Their Synthesis
See 0090

MATERIALS: Other

Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
See 0496

Automatic Hide Processing Apparatus
See 0657

BN (Boron Nitrates) Coating of Ceramic Fibers for Ceramic Fiber Composites
See 0756

Circumferentially Wrapped Carbon-Carbon Structure
See 0773

Composition and Method for Cleaning Embedded Soil from Surfaces Having Low Gloss Coatings
See 0819

Corrosion Inhibitor Formulation for Molybdenum, Tungsten and Other Metals
See 0799

Corrosion Resistant Coating
See 0800

Diamondlike Flakes
See 0758

Dispersion Toughened Ceramic Composites and Method for Making Same
See 0776

Erosion-Resistant Nosetip Construction
See 0778

0839 Fluorinated Aliphatic Polyalkylether Lubricant with an Additive Composed of an Aromatic Phosphine Substituted with Perfluoroalkylether Groups
C. E. Snyder, C. Tamborski
Department of the Air Force, Washington, DC
Filed 14 Sep 82, patented 17 Apr 84 3p
PATENT-4 443 349 Available from Comm. of Patents
It is an object of this invention to provide a lubricant composition which has little if any corrosive effect upon ferrous alloys. Another object of the invention is to provide a lubricant composition which has a relatively constant viscosity over a wide temperature range. There is provided a lubricant composition comprising a base fluid consisting essentially of a mixture of fluorinated polyethers and a corrosion inhibiting amount of a substituted aromatic phosphine.

0840 Formation of Tungsten Monocarbide from a Molten Tungstate-Halide Phase by Gas Sparging
J. M. Gomes, A. E. Raddatz, E. G. Baglin
Department of the Interior, Washington, DC
Filed 27 Jan 84, patented 18 Dec 84 8p
PATENT-4 489 044 Available from Comm. of Patents
Tungsten monocarbide is prepared by sparging a molten composition comprising an alkali metal halide and an oxygen compound of tungsten with a gas comprising a gaseous hydrocarbon, particularly methane.

High Resolution In situ Ultrasonic Corrosion Monitor
See 0553

High Temperature Structural Insulating Material
See 0411

Hot Rolling of Ceramics by the Use of Self Propagating Synthesis
See 0704

Improved Process for the Preparation of Fiber-Reinforced Ceramic Composites by Chemical Vapor Deposition
See 0780

0841 **Membrane Processes for Separation of Organic Acids from Kraft Black Liquors**
J. Rowe, H. Gregor
Department of Agriculture, Washington, DC
Filed 22 Apr 85 19p
PAT-APPL-6-725 720 Available from NTIS: price code A02
The invention relates to membrane processes for separation of organic acids from Kraft black liquors. More particularly, this invention relates to a process for the recovery of a low molecular weight, aliphatic organic acid fraction from a kraft black liquor by a series of steps including electrodialysis and electrodialytic water-splitting.

0842 **Method for Controlling the Viscosity of Siloxane Oils**
A. A. Carey, J. T. Shor
Department of Energy, Washington, DC
Filed 12 Sep 84 8p
PAT-APPL-6-649 623 Available from NTIS: price code A02
This invention relates to a method of controlling the viscosity of siloxane oils in the presence of lead by adding a small amount of a dione such as p-benzoquinone or 2,3-butanedione.

0843 **Method for Preparing Pb- beta "-Alumina Ceramic**
E. E. Hellstrom
Department of Energy, Washington, DC
Filed 30 Aug 84 15p
PAT-APPL-6-645 651 Available from NTIS: price code A02
A process is disclosed for preparing impermeable, polycrystalline samples of Pb- beta "-alumina ceramic from Na-beta "-alumina ceramic by ion exchange. The process comprises two steps. The first step is a high-temperature vapor phase exchange of Na by K, followed by substitution of Pb for K by immersing the sample in a molten Pb salt bath. The result is a polycrystalline Pb- beta "-alumina ceramic that is substantially crack-free.

0844 **Method for Removing Oxide Contamination from Silicon Carbide Powders**
J. Brynestad, C. E. Bamberger
Department of Energy, Washington, DC
Filed 1 Aug 84 10p
PAT-APPL-6-636 658 Available from NTIS: price code A02
The described invention is directed to a method for removing oxide contamination in the form of oxygen-containing compounds such as SiO sub 2 and B sub 2 O sub 3 from a charge of finely divided silicon carbide. The silicon carbide charge is contacted with a stream of hydrogen fluoride mixed with an inert gas carrier such as argon at a temperature in the range of about 200 exp 0 to 650 exp 0 C. The oxides in the charge react with the heated hydrogen fluoride to form volatile gaseous fluorides such as SiF sub 4 and BF sub 3 which pass through the charge along with unreacted hydrogen fluoride and the carrier gas. Any residual gaseous reaction products and hydrogen fluoride remaining in the charge are removed by contacting the charge with the stream of inert gas which also cools the powder to room temperature. The removal of the oxygen contamination by practicing the present method provides silicon carbide powders with desirable pressing and sintering characteristics. 1 tab.

Method of Bonding Silver to Glass and Mirrors Produced According to This Method
See 0717

Method of Preparing Single Crystalline Cubic Silicon Carbide Layers
See 1093

0845 **Method of Preparing Thin Porous Sheets of Ceramic Material**
T. E. Swarr, R. C. Nickols, M. Krasij
Department of Energy, Washington, DC
Filed 23 May 84 15p
PAT-APPL-6-612 952 Available from NTIS: price code A02
A method of forming thin porous sheets of ceramic material for use as electrodes or other components in a molten carbonate fuel cell is disclosed. The method involves spray drying a slurry of fine ceramic particles in liquid carrier to produce generally spherical agglomerates of high porosity and a rough surface texture. The ceramic particles may include the electrode catalyst and the agglomerates can be calcined to improve mechanical strength. After slurrying with suitable volatile material and binder tape casting is used to form sheets that are sufficiently strong for further processing and handling in the assembly of a high temperature fuel cell.

Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

Oxidation Protection Coatings for Polymers
See 0764

Passivation of Steel with Aqueous Amine Solutions
See 0813

Pressurized Heat Treatment of Glass Ceramic
See 0721

0846 **Process and Compositions for Preserving Fresh Hides and Skins**
W. J. Hopkins, P. C. Sweeney, D. G. Bailey
Department of Agriculture, Washington, DC
Filed 20 Oct 83, patented 23 Oct 84 3p
PATENT-4 478 728 Available from Comm. of Patents
Methods of treating fresh animal hides and skins with compositions containing butyl carbitol and other compounds have been found to preserve the hides and skins.

Process of Synthesizing Mixed BaO-TiO2 Based Powders for Ceramic Applications
See 0336

Rusty Bolt Intermodulation Interference Reducer
See 0816

0847 **Small Cartridge Heater**
F. L. Merritt, C. H. Taylor
Department of the Air Force, Washington, DC
Filed 6 Feb 84, patented 9 Apr 85 5p
PATENT-4 510 377 Available from Comm. of Patents
A cylindrical core of a ceramic such as alumina (A12O3) has grooves in the form of a double lead thread. A coil of Nichrome V is placed in the grooves, starting in one lead of the thread and returning in the other. A coil of Nichrome V is placed in the grooves, starting in one lead of the thread and returning in the other. A split ring of a ceramic such as beryllia surrounds the core. The heater is enclosed in a housing of a metal such as Inconel 600. The entire car-

tridge is only one inch long and 3/16 inch diameter. It is used as a catalyst bed heater for a satellite thruster.

Sodium Nitrate Containing Mixture for Producing Ceramic-Glass-Ceramic Seal by Microwave Heating
See 0752

Thermal Barrier Coating System
See 0771

0848 Wood Beam
E. J. Burke, P. Koch
Department of Agriculture, Washington, DC
Filed 14 Sep 84 13p
PAT-APPL-6-649 038 Available from NTIS: price code A02

A fabricated beam made from two portions of longitudinally divided tree trunks or dowelled tree trunks which are utilized as the flanges of the fabricated beam, said flanges being joined by a web by means of mortise and tenon type connections.

Woven Heat Exchanger
See 0430

MEDICINE & BIOLOGY: Instruments & Equipment

0849 Apparatus for Disintegrating Kidney Stones
E. D. Angulo
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 13 May 82, patented 2 Oct 84 7p
PATENT-4 474 180 Available from Comm. of Patents

The useful life of the wire probe in an ultrasonic kidney stone disintegration instrument is enhanced and prolonged by attaching the wire of the wire probe to the tip of an ultrasonic transducer by means of a clamping arrangement. Additionally, damping material is applied to the wire probe in the form of a damper tube through which the wire probe passes in the region adjacent the transducer tip. The damper tube extends outwardly from the transducer tip a predetermined distance, terminating in a resilient soft rubber joint. Also, the damper tube is supported intermediate its length by a support member. The damper system thus acts to inhibit lateral vibrations of the wire in the region of the transducer tip while providing little or no damping to the linear vibrations imparted to the wire by the transducer.

0850 Apparatus for Eliminating Background Interference in Fluorescence Measurements
J. C. Martin, J. H. Jett
Department of Energy, Washington, DC
Filed 6 Jan 84 16p
PAT-APPL-6-568 768 Available from NTIS: price code A02

The disclosure is directed to an apparatus for eliminating background interference during fluorescence measurements in a multiple laser flow cytometer. A biological particle stained with fluorescent dyes is excited by a laser. A fluorescence detector detects the fluorescence. The particle scatters light and a gate signal is generated and delayed until the biological particle reaches the next laser. The delayed signal turns on this next laser which excites a different stained component of the same biological particle.

0851 Blood Pressure Cuff Calibration System
E. C. Walker
Department of Health and Human Services, Washington, DC
Filed 3 Sep 82, patented 18 Sep 84 6p
PATENT-4 471 646 Available from Comm. of Patents

An apparatus for measuring the pressure-transmitting characteristics of a blood pressure cuff in terms of delivered cuff pressure. It consists of a somewhat flexible cylindrical supporting tube containing a non-compressible liquid, connected to a pressure transducer. The cuff is wrapped around the tube, and the remaining exposed area of the tube is covered by a rigid cylindrical tube to prevent bulging of the supporting tube when cuff pressure is applied thereto. The cuff is pressurized while simultaneously recording its pressure and the transducer detected pressure. The resulting X-Y curve is compared with one taken of the supporting tube alone.

0852 Cold Plate for Laboratory Use
J. L. Juncos
Department of Health and Human Services, Washington, DC
Filed 24 Jun 85 14p
PAT-APPL-6-748 207 Available from NTIS: price code A02

The present invention relates to a cold plate for laboratory use, particularly useful for tissue micro and macro dissection procedures.

Dermal Substance Collection Device
See 0516

0853 Drill Guide for Bone Plate Fixation
R. M. Weigle, S. Duggan, C. Foster, J. Miner, J. Vantucci
Department of Health and Human Services, Washington, DC
Filed 22 Feb 83, patented 5 Mar 85 8p
PATENT-4 502 475 Available from Comm. of Patents

The patent describes a drill guide device for bone plate fixation. The guide block consists of an elongated drill guide block which has a longitudinal recess for receiving and positioning a bone plate with screw openings.

0854 Elbow and Knee Joint for Hard Space Suits and the Like
H. C. Vykukal
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 20 Dec 84 22p
PAT-APPL-6-684 190 Available from NTIS: price code A02

An elbow or knee joint for a hard space suit or similar usage is formed of three serially-connected rigid sections which have truncated spherical configurations. The ends of each section form solid geometric angles, and the sections are interconnected by hermetically-sealed ball bearings. The outer two sections are fixed together for rotation in a direction opposite to rotation of the center section. A preferred means to make the outer sections track each other in rotation comprises a rotatable continuous bead chain which engages sockets circumferentially spaced on the facing sides of the outer races of the bearings. The joint has a single pivot point and the bearing axes are always contained in a single plane for any articulation of the joint. Thus flexure of the joint simulates the coplanar flexure of the knee or eblow and is not susceptible to lockup.

0855 Electrolytic Pressure Transduction System
G. H. Bryant
Department of the Army, Washington, DC
Filed 3 Oct 84 15p
PAT-APPL-6-657 438 Available from NTIS: price code A02
This invention is directed to a Wheatstone bridge circuit for measuring pressure in the distal esophageal sphincter (D.E.S.) as well as in other organs and bodily cavities. A flexible hollow tube having three spaced electrodes is lodged in the esophagus. The tube is partly filled with a saline solution to cover the electrodes, thereby producing two series connected, pressure sensitive resistors. The electrolytic resistors are coupled to two series connected fixed resistors to complete the bridge circuit. Electrical imbalances in the bridge circuit are measured in terms of the pressure corresponding to the pressure applied by the D.E.S.

0856 Flow Through Bacteria Detection System
J. R. Wilkins, D. C. Grana
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 4 Apr 85 21p
PAT-APPL-6-719 797 Available from NTIS: price code A02
A microbial detection system that automatically collects, incubates, and enumerates the micro-organisms within a water sample in a few hours, then sterilizes the system in order to prepare the system for another sample, is disclosed. Initially, the system is sterilized and then purged to remove residual organisms from the previous test. The sample is collected in accumulator until it reaches a predetermined level when intake valve is opened forcing the sample into incubator. The growth media is then introduced into incubator and the system is incubated for a duration dependent on the number of test organisms. Finally, the sample is dumped and the entire process is repeated for a new sample. The sample intake valve employs a unique combination of concentric dome valves and valve stems which are solenoid operated. The concentric dome valves provide a fluid intake port capable of reliable sterilization between sample intakes.

0857 Forward Field Autotransfusion Device
E. I. Schweitzer, K. G. Swan
Department of the Army, Washington, DC
Filed 10 May 85 12p
PAT-APPL-6-732 335 Available from NTIS: price code A02
A typical embodiment of the invention enables blood to be drawn from the pleural cavity of an injured patient for autotransfusion purposes. A chest tube is connected to an inlet check valve within a resilient bulb suction pump. Blood, drawn into the bulb, is expelled therefrom by manipulating the bulb to cause the blood to flow out of the bulb through a filter and a discharge check valve to a blood collection bag. This is a patent application.

0858 Guided Trephine Samples for Skeletal Bone Studies
C. M. Oloff
Department of the Air Force, Washington, DC
Filed 3 Jul 85 29p
PAT-APPL-6-751 393 Available from NTIS: price code A03
This patent application describes a bone biopsy arrangement especially suited for use in obtaining axial skeleton trephine samples from the spinal vertebra centrum of a living test specimen in a safe and rapid manner. The disclosed arrangement uses radiographic mapping, precise mechanical control of the trephine with an apparatus disclosed in detail, conventional trephine energizing and a test specimen such as a rhesus monkey. Improved quality plural samples from a single test subject that were heretofore considered too inaccessible and dangerous for practicality are achieved.

0859 Helical Coil for Diathermy Apparatus
P. S. Ruggera, G. Kantor
Department of Health and Human Services, Washington, DC
Filed 28 Jan 83, patented 9 Jul 85 7p
PATENT-4 527 550 Available from Comm. of Patents
A deep-heating diathermy apparatus consisting of a hollow tube adapted to receive a part of the body, or other dielectric material to be treated. An rf coil coaxially surrounds the tube and is driven by an rf generator. The total wire length of the coil is approximately 0.7 to 1.3 (depending on specific electrical properties and volume of the treated material) times the wavelength of a basic driving frequency provided by the generator. The output of the generator is supplied to the coil via a 50-ohm coaxial cable and a matching impedance. The coil may be driven by frequencies corresponding to integral multiples of one-half the basic wavelength, to enable shifting the heat focus volume along the coil axis from the normal centered location on the axis produced by full-wave excitation.

0860 Implantation Device for Use In vivo Stimulation and Collection of Monocytes from Peritoneum of Vertebrate
P. H. Klesius, B. G. Brown
Department of Agriculture, Washington, DC
Filed 11 Aug 82, patented 19 Mar 85 6p
PATENT-4 505 277 Available from Comm. of Patents
An apparatus for in vivo stimulation and collection of monocytes from peritoneum of vertebrate is disclosed. The apparatus is implanted between the skin and the peritoneum. This device stimulates the production and growth of monocytes and at the same time attracts the monocytes into the apparatus. The apparatus comprises a container which has a plurality of membrane-covered holes for monocyte entry. There is an inlet and outlet conduit which is attached to opposing sides of the container to allow flushing. The conduits are equipped with a lock tip coupler for connection when the flushing operation is not taking place.

0861 Improved Toposcopic Catheter and Method of Fabrication
D. R. Shook
Department of Health and Human Services, Washington, DC
Filed 6 Sep 84 25p
PAT-APPL-6-647 728 Available from NTIS: price code A02
The present invention relates to toposcopic or everting catheters and methods of fabrication of such catheters. The present invention is an improvement of the catheters and fabrication techniques described in U.S. patent application Serial Number 06/022,219, filed March 19, 1979 by Seth Goldstein and Robert Jones, and entitled 'Method and Apparatus For Traversing Blood Vessels'.

0862 Infrared Optical Measurement of Blood Gas Concentrations and Fiber Optic Catheter
T. J. Manuccia, J. G. Eden
Department of the Navy, Washington, DC
Filed 15 Dec 81, patented 9 Apr 85 7p
PATENT-4 509 522 Available from Comm. of Patents
This patent pertains to a simple compact optical device and method for quickly measuring the concentration of CO and CO2, bound to hemoglobin or dissolved in a person's blood using optical techniques which do not require removing a blood sample from the body. It also provides a simple fiber optic device for measuring blood-gas concentrations of critical internal points of the circulatory system such as the aorta.

0863 Integrated Wheelchair and Ambulator
J. P. Wier, R. A. Garrett
Department of the Navy, Washington, DC
Filed 1 Aug 79, patented 26 Jun 84 7p
PATENT-4 456 086 Available from Comm. of Patents
An ambulator which can be mated to a wheeled frame to form a wheelchair is provided to enable a paraplegic to stand on the ambulator and be separated from the frame for maneuvering in confined spaces. The ambulator has power operated articulated linkage for raising the paraplegic out of and free of the frame to the standing position on the ambulator; the compact base of the ambulator containing a drive mechanism for moving the ambulator in any desired direction through controls conveniently located on an arm rest. When the ambulator is mated with the frame, the linkage is lowered to carry the paraplegic in the sitting position.

0864 Light-Weight Oxygen Delivery Hood Assembly for Hyperbaric Chamber
J. N. Erlich
Department of the Air Force, Washington, DC
Filed 19 Mar 85 14p
PAT-APPL-6-713 666 Available from NTiS: price code A02
The present invention provides a light-weight hyperbaric oxygen therapy hood assembly comprising a hood having a gas inlet and outlet. The neckdam diaphragm can be varied from an open to a closed condition for sealing of the neckdam around the neck of the patient, the diaphragm being concentric to the hood and neckdam. An inflatable bladder is providable at the back of the hood. A check valve is affixable to the gas outlet of the hood. This is a patent application.

Low Temperature Inflator Apparatus
See 0485

0865 Medical Apparatus
P. H. Sugarbaker
Department of Health and Human Services, Washington, DC
Filed 31 May 85 25p
PAT-APPL-6-740 171 Available from NTIS: price code A02
An improved device of a combination of elements is adapted to be used with an elongated flexible instrument, such as an endoscope, and capable of at least partially extending with the instrument into the lumen of a tubular body part, such as the large intestines. A sheath is adapted to be mounted on the instrument. The instrument and sheath are provided with selectively inflatable cuffs movable with respect to one another by axially sliding the sheath on the instrument. The movable relationship of the sheath and instrument and the selective control of air to the cuffs allows the user to more easily navigate the front of the instrument through the lumen of the body part with less discomfort to the patient.

0866 Metallic Aid and Technique in Fitting Voice Prosthesis
E. Cantu
Department of the Air Force, Washington, DC
Filed 2 Jul 82, patented 14 Aug 84 4p
PATENT-4 465 068 Available from Comm. of Patents
A metallic insert for use in radiographically fitting a voice prosthesis to a post-laryngectomy patient is described which comprises an elongate, generally cylindrically shaped cast metal member sized to fit snugly within the housing of a dummy prosthesis whereby the fit of the prosthesis can be accurately assessed radiographically in minimum time and with optimal fit to the individual patient.

0867 Metallic Aid and Technique in Fitting Voice Prosthesis
E. Cantu
Department of the Air Force, Washington, DC
Filed 2 Jul 82, patented 14 Aug 84 4p
PATENT-4 465 068 Available from Comm. of Patents
A metallic insert for use in radiographically fitting a voice prosthesis to a post-laryngectomy patient is described which comprises an elongate, generally cylindrically shaped cast metal member sized to fit snugly within the housing of a dummy prosthesis whereby the fit of the prosthesis can be accurately assessed radiographically in minimum time and with optimal fit to the individual patient.

0868 Method for Thermal Monitoring Subcutaneous Tissue
J. S. Heyman, G. H. Brandenburger
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 22 Feb 84, patented 30 Apr 85 6p
PATENT-4 513 750 Available from Comm. of Patents
A noninvasive accurate method for measuring the temperature of tissue beneath the surface of a living body is described. Ultrasonic signals are directed into beads of a material that are inserted into the tissue with a syringe. The reflected signals indicate the acoustic impedance or resonance frequency of the beads which in turn indicates the temperature of the tissue. A range of temperatures around the melting temperature of the material can be measured by this method.

0869 Nuclear Medicine Imaging System
G. W. Bennett, A. B. Brill, Y. J. C. Bizais, R. W. Rowe, I. G. Zubal
Department of Energy, Washington, DC
Filed 11 Mar 83 34p
PAT-APPL-6-474 383 Available from NTIS: price code E02
It is an object of this invention to provide a nuclear imaging system having the versatility to do positron annihilation studies, rotating single or opposed camera gamma emission studies, and orthogonal gamma emission studies. It is a further object of this invention to provide an imaging system having the capability for orthogonal dual multipinhole tomography. It is another object of this invention to provide a nuclear imaging system in which all available energy data, as well as patient physiological data, are acquired simultaneously in list mode.

0870 Osteoclast for Whole Bone Testing
H. W. Smith, C. R. Kulp
Department of the Air Force, Washington, DC
Filed 5 Jan 83, patented 20 Nov 84 8p
PATENT-4 483 198 Available from Comm. of Patents
A novel test device particularly adaptable for simultaneously applying bending and torsion loads to whole bone specimens is provided, which comprises a substantially rigid support frame, first and second supports pivotally mounted to the frame for supporting the specimen therebetween, transverse loading (bending) means supported by the frame intermediate the supports for applying loads to the specimen at predetermined locations therealong, a torsion loading means supported on the frame for applying torque to said specimen by rotation of the second support, and force sensing means for measuring the bending and torsion loads and providing an output signal proportional thereto.

0871 Photorefractor Ocular Screening System
J. H. Kerr, J. R. Richardson
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 28 Sep 84 25p
PAT-APPL-6-655 605 Available from NTIS: price code A02
A method and apparatus for detecting human eye defects, particularly detection of refractive error is presented. Eye reflex is recorded on color film when the eyes are exposed to a flash of light. The photographs are compared with predetermined standards, to detect eye defects.

0872 Polyactic-Polyglycolic Acid Copolymer Combined with Decalcified Freeze-Dried Bone for Use as a Bone Repair Material
J. P. Schmitz
Department of the Army, Washington, DC
Filed 9 Oct 84 17p
PAT-APPL-6-658 945 Available from NTIS: price code A02
A novel bone repair material consisting essential of decalcified freeze-dried bone and biodegradable, biocompatible compolymer has been developed for improving and accelerating the healing of osseous tissue. The bone repair material was prepared by combining decalcified bone with a copolymer consisting essentially of a 50:50 poly(L)(-)lactide co-glycolide.

0873 Portable Reclining Examination Chair
H. B. Cranford, L. T. Geasey, M. F. Arnold
Department of the Army, Washington, DC
Filed 20 Nov 81, patented 12 Jun 84 8p
PATENT-4 453 768 Available from Comm. of Patents
A portable multi-component reclining examination chair comprises a container wherein the chair's components can be stored for transportation. When removed from the container, the components attach to the container for assembly of the chair. Assembled, the chair uses the container as a stabilizing base to which are attached leveling legs, an adjustable seat having a reclinable back rest, a head rest, removable arm rests and either a leg rest or a foot rest depending on the particular use of the chair.

Random Pattern Tracking Acceleration Tolerance Tester
See 0615

0874 Retinal Information Mapping System
D. L. Wallquist, G. G. Kuperman
Department of the Air Force, Washington, DC
Filed 14 Jul 82, patented 22 Jan 85 8p
PATENT-4 494 838 Available from Comm. of Patents
The mapping provides a capability for quantifying an external scene in a manner equivalent to the allocation at perceptual bandwidth in the human retina. The device samples the scene, either photographically or by video; records a digital version of the scene, processes the digital version so that the effects of the distribution rods in the retina provides the weighting for allocating signal processing bandwidth differentially across the scene in accordance with human physiological data, and produces a recording of the processed digital image. The processing uses a selected acuity factor as a parameter, a neighborhood is assigned to each pixel, with a radius r equal to(1.0/(acuity factor XR))/2.0, where R is the distance from the center of the image. The digital values of all pixels in the neighborhood are summed and the sum is divided by the number of pixels in the neighborhood to obtain an average value. This value is then assigned to the pixel in forming a processed image frame.

0875 Sampling Device
D. G. Englar, R. G. Altman
Department of the Army, Washington, DC
Filed 12 Feb 82, patented 8 May 84 7p
PATENT-4 447 395 Available from Comm. of Patents
Apparatus for processing and analyzing various liquids, such as blood serum, includes an idexable table for supporting a plurality of liquid sample containers. A probe is inserted into each sample container in succession. During probe insertion, a portion of the sample to be analyzed is withdrawn by the probe from the respective container and moved to a station where it can be analyzed and tested. The probe is then moved to a station where it can be washed prior to insertion into the next sample container. The drive mechanism for the apparatus is characterized by the fact that all indexing mechanisms and actuator cams are mounted on a single rotatable shaft and arranged such that each periodic function performed by the mechanism is directly coupled to the rotation of the shaft.

0876 Servo Operated Anti-G Suit Pressurization System
R. J. Crosbie, P. R. Edwards
Department of the Navy, Washington, DC
Filed 22 May 84 17p
PAT-APPL-6-613 497 Available from NTIS: price code A02
A servo operated system for controlling pressurization of an aircraft pilot's anti-G suit during high energy maneuvers has a servo operated control valve and a feedback loop controller for minimizing pressure lag in the suit. The controller has dual modes of operation: one for normal flight conditions and one for combat flight conditions. The normal flight mode provides nominal G-protection while the combat mode provides faster response by prepressurizing the anti-G suit to a bias level and lowering the G-force threshold. While in the combat mode, the crewman may select an adjustable pulsating signal to be superimposed on the prepressurization level to obtain additional comfort. Alternatively, he may select a superimposed pulsating signal which is synchronized with his own heartbeat to reinforce the pumping action of the heart.

0877 Shoulder and Hip Joint for Hard Space Suits and the Like
H. C. Vykukal
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 20 Dec 84 21p
PAT-APPL-6-684 192 Available from NTIS: price code A02
Shoulder and hip joints for hard space suits are disclosed which comprisi ng three serially connected truncated spherical sections, the ends of which converge. Ball bearings between the sections permit relative rotation. The proximal end of the first section is connected to the torso covering by a ball bearing and the distal end of the outermost section is connected to the elbow or thigh covering by a ball bearing. The sections are equi-angular and this alleviates lockup, the condition where the distal end of the joint leaves the plane in which the user is attempting to flex. The axes of rotation of the bearings and the bearing mid-planes are arranged to intersect in a particular manner that provides the joint with a minimum envelope. In one embodiment, the races of the bearing between the innermost section and the second section is partially within the inner race of the bearing between the torso and the innermost spherical section further to reduce bulk.

0878 Suture Needle Holder
E. J. Schweitzer, J. R. Bresch
Department of the Army, Washington, DC
Filed 3 Jun 85 15p
PAT-APPL-6-740 610 Available from NTIS: price code A02
A typical embodiment on the invention enables a surgeon to occupy only one hand in manipulating a suture needle. The instrument thumb handle has, on one end, a freely rotatable short roller. The ring finger handle, moveover, has a long roller that is journalled within that handle. One end of the long roller bears against the short roller to form a nip that engages the suture needle. The other end of the long roller terminates near the ring finger handle grip to enable the surgeon to rotate the long roller with another finger of the same hand and thereby draw the needle through the nip, repositioning the needle for another stitch. This is a patent application.

0879 Torso Sizing Ring Construction for Hard Space Suit
H. C. Vykukal
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 20 Dec 84 15p
PAT-APPL-6-684 193 Available from NTIS: price code A02
A hard suit for use in space or diving applications has an adjustable length torso covering that will fit a large variety of wearers. The upper and lower sections of the covering interconnect so that the covering will fit wearers with short torsos. One or more sizing rings may be inserted between sections to accommodate larger torso sizes as required. Since access of the astronaut to the torso covering is preferably through an opening in the back of the upper section (which is closed off by the backpack), the rings slant upward-forward from the lower edge of the opening. The lower edge of the upper covering section has a coupler which slants upward-forward from the lower edge of the back opening. The lower section has a similarly slanted coupler which may interfit with the upper section coupler to accommodate the smallest torso size. Each ring has an upper coupler which may interfit with the upper section coupler and a lower coupler which may interfit with the lower section coupler.

0880 Ultrasonic Therapy Applicator That Measures Dosage
C. L. Christman
Department of Health and Human Services, Washington, DC
Filed 2 Dec 82, patented 26 Feb 85 11p
PATENT-4 501 151 Available from Comm. of Patents
An ultrasonic therapy applicator wherein therapeutic heating is provided by creating a diffuse ultrasonic field in a liquid, such as water, in a tank in which living tissue may be immersed. The diffuse acoustic energy is produced by frequency-modulating the driving ultrasonic frequency in a band employing 'white noise' modulation. The apparatus consists of a reverberation tank suspended from a support by four wires. The support is used to mount a transducer, a hydrophone, a specimen holder and a stirrer. The tank is surrounded by a temperature bath. The hydrophone is used for measuring decay rates. The transducer is acoustically matched to the water. Ultrasound is coupled from the transducer via an ellipsoidal vertical reflector vertically aligned below the acoustic window of the transducer.

0881 Use of Paramagnetic Metalloporphyrins as Contrast Agents for Tumors in NMR Imaging
J. S. Cohen
Department of Health and Human Services, Washington, DC
Filed 28 Feb 85 27p
PAT-APPL-6-706 622 Available from NTIS: price code A03
Water-soluble paramagnetic metalloporphyrins are used as contrast enhancing agents for magnetic resonance imaging. These agents exhibit excellent localization, non-toxicity and suprisingly high contrast enhancement in magnetic resonance imaging applications.

0882 Vibration Dosimeter
D. T. Punia, M. Pope, D. Donnermeyer
Department of Health and Human Services, Washington, DC
Filed 20 May 82, patented 9 Oct 84 9p
PATENT-4 475 401 Available from Comm. of Patents
The invention is an apparatus to monitor and record, for an industrial envir onment, two natural frequencies with respect to a 'seated spinal system', namely, approximately 10 Hz and approximately 4 Hz, the natural resonant frequencies of the spine. Raw acceleration signals are amplified, conditioned and filtered to allow only 20 Hz or less to pass. The signals are then divided into two respective channels, namely, below 20 Hz and below 8 Hz, following parallel paths through an amplitude detector and through a zero crossover detector, rectifier and digital filter.

0883 Vision Test Chart and Method Using Gaussians
H. L. Task
Department of the Air Force, Washington, DC
Filed 23 Jan 85 19p
PAT-APPL-6-693 927 Available from NTIS: price code A02
A novel vision test device and method for measuring the ability of a subject to perceive contrasts is described, which comprises a chart for display to the subject having a plurality of visual test shapes systematically organized thereover in a predetermined array on a background of preselected

luminance or reflectance level, each test shape having a preselected luminance level providing maximum contrast relative to background at its center and substantially zero contrast relative to background at its edges, the luminance (or reflectance) level of each test shape varying radially from its preselected distribution factor. (Patent applications)

MEDICINE & BIOLOGY: Pharmacology

0884 Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
M. S. Wysor, L. A. Zwelling
Department of the Army, Washington, DC
Filed 3 Apr 81, patented 30 Jul 85 4p
PATENT-4 532 122 Available from Comm. of Patents
A novel method has been developed for improved chemotherapy of animals infected with African trypanosomiais. The method involves the concurrent administration of therapeutically effective amounts of cis-diamminedichloroplatinum (II) and bis-(diethylthiocarbamoyl)disulfide (disulfiram) or diethyl dithiocarbamate to the hydrated animal.

0885 Antiinflammatory 2,3-Didemethylcolchicine and Derivatives
A. Brossi
Department of Health and Human Services, Washington, DC
Filed 26 Feb 85 16p
PAT-APPL-6-705 709 Available from NTIS: price code A02
The present invention describes the finding of potent antiinflammatory properties in 2,3-didemethyl-colchicine and its analogs. Especially in the most preferred compound it shows relatively low acute toxicity in experimental animals in comparison to colchicine, and thus is a useful agent in the treatment of rheumatic disorders.

Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

Biologically-Active Xanthine Derivatives
See 0045

Carbamates of Colchicine for Treatment of Gout
See 0046

0886 Chelating Agents for the Treatment of Iron Overload
C. G. Pitt
Department of Health and Human Services, Washington, DC
Filed 23 Feb 81, patented 9 Jul 85 4p
PATENT-4 528 196 Available from Comm. of Patents
The present invention consists of chelating agents for the treatment of iron overload and methods of using these agents in mammals such as mice and rats. These agnets or compositions comprise diesters of dicarboxylic acids, which are phenolic derived and otherwise resemble ethylene and propylenediamine diacetic acids. The acids are known as: HBED (N,N'-bis(2-hydroxybenzyl)ethylenediamine N,N-diacetic acid); EHPG (ethylenediamine N,N'-bis(2-hydroxyphenylacetic acid)); HBPD(N,N'-bis(2-hydroxybenzyl)propylenediamine-N,N'-diacetic acid); HBPD (N,N'-bis(2-hydroxybenzyl)propylenediamine-N,N'-diacetic acid); HBHPD (N,N'-bis(2-hydroxybenzyl)-2-hydroxy-1,3-propylenediamine-N,n'-diacetic acid). Mineral acid addition salts are also included in the spirit of the invention. Such salts as sulfuric, hydrochloric and nitric may be utilized. In activity it has been found that the odd-numbered carbon atom esters, such a dimethyl and dipentyl, specially of HBED, are of highest activity, as well as the dipentyl ester of the HBPD. In summation, the HBED esters were found to have the highest activity of those esters studied.

0887 Dimeric Enkephalins
D. Rodbard, Y. Shimohigashi, H. C. Chen, T. Costa
Department of Health and Human Services, Washington, DC
Filed 29 Sep 82, patented 28 Aug 84 7p
PATENT-4 468 383 Available from Comm. of Patents
The compounds of the invention are symmetrical dimers of enkephalin polypeptides comprising enkephalin polypeptide monomers linked at the C-termini thereof with a difunctional amino bridging group. The compounds are useful as investigative tools for probing the opiate receptor membranes, particularly as radiolabelled ligands for exploring the delta opiate receptor, and also have particular use as narcotic and/or analgesic agents.

0888 Magnetically-Localizable, Polymerized Lipid Vesticles and Method of Disrupting Same
E. L. Chang
Department of the Navy, Washington, DC
Filed 12 Mar 85 16p
PAT-APPL-6-714 711 Available from NTIS: price code A02
It is an object of this invention to provide lipid vesicles that are stable in vivo to unintended physical and chemical disruption. A further object of this invention is to provided vesicles with polymerizable membranes. A further object of this invention is to provide vesicles that can carry aqueous solutions of therapeutic agents. A further object of this invention is to provide vesicles that can be immoblized at an in vivo target site by an external magnetic field. A further object of this invention is to control the rate of release of an encapulated therapeutic agent at the target site by oscillating the magnetic field. These and other objects are achieved by encapsulating therapeutic agents and ferromagnetic particles in a lipid vesicle formed using polymerizable lipids whichare subsequently polymerized to form a stable vesicle resistant to chemical and physical attack. The vesicles are attracted to the targeted site by an external magnetic field. Once localized at the target site, an oscillating magnetic field is used to destabilize the vesicle membrane resulting in controlled release of the therapeutic agent at the target site. This is a patent application.

Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056

Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058

0889 Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
D. L. Klayman, J. P. Scovill, J. F. Bartosevich, C. J. Mason, T. S. Griffin
Department of the Army, Washington, DC
Filed 14 Oct 81, patented 8 May 84 10p
PATENT-4 447 427 Available from Comm. of Patents
This invention relates to various 2-acetyl- and 2-propionylpyridine thiosemicarbazones which are substituted on the

4-nitrogen atom. These compounds are useful in either in the treatment of malaria or bacterial infection. Also disclosed are several synthetic procedures used to prepare the thiosemicarbazones.

0890 Monoclonal Antibodies Against Chlamydial Genus Specific Lipopolysaccharide
H. D. Caldwell, P. J. Hitchcock
National Institutes of Health, Bethesda, MD
Filed 30 Jan 85 17p
PAT-APPL-6-696 538 Available from NTIS: price code A02
The patent application discloses monoclonal antibodies which specifically bind to the liposaccharide (LPS) epitope of the chlamydia genus of bacteria. A method for producing these monoclonal antibodies is also disclosed.

0891 Narcotic Antagonists in the Therapy of Shock
J. W. Holaday, A. I. Faden
Department of the Army, Washington, DC
Filed 27 Mar 81, patented 28 Feb 84 6p
PATENT-4 434 168 Available from Comm. of Patents
The use of narcotic antagonists (e.g., naloxone) in shock therapy is disclosed.

New Antineoplastic Platinum (IV) Complexes
See 0063

Pharmacologically Active Amine Boranes
See 0065

0892 Prevention of Graft Versus Host Disease Following Bone Marrow Transplantation
D. M. Neville, R. J. Youle
Department of Health and Human Services, Washington, DC
Filed 19 Jul 82, patented 19 Feb 85 4p
PATENT-4 500 637 Available from Comm. of Patents
A monoclonal antibody known as TA-1 directed against human T-cells is covalently linked to the toxin ricin and used to treat human donor bone marrow before the marrow is infused into a human recipient.

0893 Purification of Uromodulin
A. V. Muchmore, J. M. Decker
Department of Health and Human Services, Washington, DC
Filed 27 Jun 85 17p
PAT-APPL-6-749 442 Available from NTIS: price code A02
Ur omodulin, an 85 kilo Dalton glycoprotein obtained from human urine, is disclosed. The glycoprotein molecule of this invention is a potent immuno-suppressive agent which binds with high affinity to interleukin-1. A process for purification of uromodulin is also disclosed.

0894 Saponin-Based Polyether Polyols
National Institutes of Health, Bethesda, MD
Filed 4 Nov 83 24p
PAT-APPL-6-548 849 Available from NTIS: price code A02
The invention provides a method for solubilizing digitonin and digitonin-related saponins comprising alkoxylating the saponin starting material with conventional alkoxylation agents such as alkylene oxides or diglycidyl ethers. The product saponin-based polyether polyols have low toxicity, high solubility, and a decreased capacity for forming insoluble complexes with cholesterol. The adducts of the present invention further have particular application for solubilization of lipophilic pharmaceuticals and suppression of mycoplasmas in cell cultures.

0895 Substantially Purified Tumor Growth Inhibitory Factor (TIF)
G. J. Todard, C. A. Fryling, K. Iwata
Department of Health and Human Services, Washington, DC
Filed 20 Apr 84 61p
PAT-APPL-6-602 520 Available from NTIS: price code A04
The present invention relates to substantially purified tumor growth inhibiting factor (TIF). More particularly, the present invention is directed to substantially purified polypeptide factors capable of inhibiting the growth of certain cancer cells without adversely affecting the growth of certain normal human cells.

Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

0896 2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
J. P. Scovill, D. L. Klayman, S. P. Massie, S. D. Grant, A. Gonzalez
Department of the Army, Washington, DC
Filed 12 Feb 82, patented 3 Apr 84 10p
PATENT-4 440 771 Available from Comm. of Patents
This invention relates to the preparation and use of various 2-acetyl quinoline thiosemicarbazones which are substituted on the 4-nitrogen atom. These compounds are useful in the treatment of gonorrhea and, in addition, many are useful either in the treatment of malaria or bacterial infections, such as leprosy and meningitis.

0897 4-Methyl-5-(Unsubstituted and Substituted Phenoxy)-6-Methoxy-8-(Aminoalkylamino)Quinolines
R. E. Strube, M. P. LaMontagne
Department of the Army, Washington, DC
Filed 8 Dec 81, patented 14 Feb 84 16p
PATENT-4 431 807 Available from Comm. of Patents
Compounds of the class including 4-methyl-5-(unsubstituted and substituted phenoxy)-6-methoxy-8-(aminoalkylamino)quinolines as the free bases and pharmaceutically acceptable acid amine salts are described. The compounds are highly effective antimalarial agents which posses, surprisingly, both tissue schizonticidal (radical curative) and blood schizonticidal (suppressive) activity. In addition, these drugs have significantly better therapeutics indices than primaquine which is the current tissue schizonticidal drug of choice. Primaquine possesses no useful blood schizonticidal activity at tolerated dose levels.

MEDICINE & BIOLOGY: Other

0898 Adeno-Associated Virus as Eukaryotic Expression Vector
B. J. Carter
Department of Health and Human Services, Washington, DC
Filed 15 Mar 85 27p
PAT-APPL-6-712 236 Available from NTIS: price code A03
The present invention discloses a plasmid of a suitable genotype capable of functioning as a vector for stable maintenance or expression of a gene or DNA sequence in

eukaryotic cells. A method of preparing such plasmids is also disclosed. The plasmid is packagable and rescuable.

Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
See 0884

Antihypertensive Neutral Lipid
See 0041

Antiinflammatory 2,3-Didemethylcolchicine and Derivatives
See 0885

Apparatus for Eliminating Background Interference in Fluorescence Measurements
See 0850

Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

Bagworm Moth Attractant and Plant Protectant
See 0044

Biocompatible Cementitious Dental Compositions
See 0740

Biological Sensor for the Detection of Toxicants
See 0505

0899 Blood Lysis and Culture System
C. H. Zierdt
Department of Health and Human Services, Washington, DC
Filed 5 Mar 85 23p
PAT-APPL-6-708 517 Available from NTIS: price code A02
The invention relates in general to blood culturing and blood culture systems, and more particularly, to blood culturing and blood culture systems wherein blood cells are lysed to improve the ability of microorganisms present in the blood to grow in the culture medium.

0900 Boll Weevil Trap
W. A. Dickerson
Department of Agriculture, Washington, DC
Filed 16 May 85 23p
PAT-APPL-6-734 647 Available from NTIS: price code A02
The invention relates to a device for capturing boll weevils. The author has designed a trap which is substantially more efficient than the prior art and yet can be inexpensively fabricated and readily assembled and disassembled from a plurality of components. The basic components described above are employed in the present invention. In particular, a wire mesh funnel (patent '515) is employed as opposed to a solid funnel (patent '577) because it has been determined that the wire mesh funnel eliminates heat build up and provides for better pheromone dispersal.

Carbamates of Colchicine for Treatment of Gout
See 0046

Chelating Agents for the Treatment of Iron Overload
See 0886

0901 Cloning and Expression of the Gene for Bacteriophage T7 RNA Polymerase
F. W. Studier, P. Davanloo, A. H. Rosenberg
Department of Energy, Washington, DC
Filed 30 Mar 84 20p
PAT-APPL-6-595 016 Available from NTIS: price code A02
This application describes a means to clone a functional gene for bacteriophage T7 RNA polymerase. Active T7 RNA polymerase is produced from the cloned gene, and a plasmid has been constructed that can produce the active enzyme in large amounts. T7 RNA polymerase transcribes DNA very efficiently and is highly selective for a relatively long promoter sequence. This enzyme is useful for synthesizing large amounts of RNA in vivo or in vitro, and is capable of producing a single RNA selectively from a complex mixture of DNAs. The procedure used to obtain a clone of the T7 RNA polymerase gene can be applied to other T7-like phages to obtain clones that produce RNA polymerases having different promoter specificities, different bacterial hosts, or other desirable properties.

0902 Competitive ELISA (Enzyme-Linked Immunosorbent Assay) for the Detection of Antibodies
W. C. Saxinger, R. C. Gallo
Department of Health and Human Services, Washington, DC
Filed 24 May 85 16p
PAT-APPL-6-737 458 Available from NTIS: price code A02
A competitive enzyme-linked immunosorbent assay (ELISA) for the detection of antibodies is disclosed. This ELISA technique is more sensitive, more specific, and more accurate than known ELISA techniques. The competitive ELISA of this invention is particularly suited to the detection of human T-cell leukemia-lymphoma virus type III (HTLV-III).

Control of Eastern Black Nightshade with a Fungal Pathogen
See 0003

0903 Deoxyribonucleic Acid Molecules Useful as Probes for Detecting Deleterious Genes Incorporated into Chromosomal DNA
J. R. Stevenson, J. Groffen, N. Heisterkamp
Department of Health and Human Services, Washington, DC
Filed 18 Jan 84 34p
PAT-APPL-6-571 911 Available from NTIS: price code A03
The invention relates to a single-stranded deoxyribonucleic acid molecule having a length less than about 25 kb and preferably less than about 15 kb, and containing at least three distinct nucleotide sequences which are the sites for incorporation into a chromosome of a deoxyribonucleic acid molecule encoding a deleterious gene. Such a single-stranded deoxyribonucleic acid molecule may be derived from a chromosome. The single-stranded molecule may be incorporated into double-stranded deoxyribonucleic acid molecules. Such deleterious genes include oncogenes.

Dermal Substance Collection Device
See 0516

Dimeric Enkephalins
See 0887

Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052

0904 Enhancement of Specific Antibody Production with Anti-IgD Antibodies
F. D. Finkelman
Department of the Navy, Washington, DC
Filed 27 Jun 85 17p
PAT-APPL-6-749 681 Available from NTIS: price code A02
A method is disclosed for the production of IgG antibodies to haptens which comprises binding the hapten to an antibody from one species, injecting the antibody-hapten into another species, and isolating the antibodies produced in response to the hapten.

0905 Enzyme-Linked Immunosorbent Assay (ELISA) for Determining Anti-Bodies against Herpes Simplex Virus (HSV) Types 1 and 2 in Human Sera
B. Hampar, S. D. Showalter, M. Zweig
Department of Health and Human Services, Washington, DC
Filed 28 Dec 84 23p
PAT-APPL-6-687 370 Available from NTIS: price code A02
A method and test kit for the serological diagnosis of human infection by herpes simplex virus type 1 (HSV-1) and herpes simplex virus type 2 (HSV-2) using immunoaffinity purified virus-coded glycoproteins as target antigens. A preferred embodiment of the method employs a variation of the enzyme-linked immunosorbent assay (ELISA) whereby mionoclonal antibodies are used to purify target antigens, and test sera are absorbed with virus-infected cell extracts to remove intertypic cross-reacting antibodies.

0906 Excimer Laser Phototherapy for the Dissolution of Vascular Obstruction
D. M. Gruen, C. E. Young, M. J. Pellin
Department of Energy, Washington, DC
Filed 9 Jan 84 13p
PAT-APPL-6-569 088 Available from NTIS: price code A02
Removal of abnormal human tissue with reduced thermal damage is achieved by selecting a laser having a wavelength in the order of 290 to 400 nm, orienting a laser-transmitting glass member toward the abnormal tissue and directing the laser through the glass member at power densities, pulse rates, and times sufficient to cause multiphoton absorption and bond breaking by Coulomb repulsion rather than thermal destruction. 2 figures.

0907 Functionalized Congeners of Adenosine Receptor Agonists
K. A. Jacobson, K. L. Kirk, J. W. Daly
Department of Health and Human Services, Washington, DC
Filed 29 Mar 85 30p
PAT-APPL-6-717 624 Available from NTIS: price code A03
The activity of adenosine as a neuromodulator in the circulatory, endocrine, immune, and central nervous system is associated with two receptor subtypes (A1-inhibitory towards adenylate cyclase; A2-stimulatory). In an effort to identify highly potent and specific analogs of adenosine receptor agonists (adenosines) and to develop receptor probes, there is applied the functionalized 'congener approach' which uses compounds having like structure and biological effects. Analogs of adenosine receptor ligands bearing functionalized chains are synthesized and attached covalently to various organic moieties, such as amines and peptides.

Guided Trephine Samples for Skeletal Bone Studies
See 0858

0908 Human Monocytes Cultured in Suspension in Serum-Free Medium
H. C. Stevenson
Department of Health and Human Services, Washington, DC
Filed 11 Jun 85 42p
PAT-APPL-6-743 570 Available from NTIS: price code A03
The present invention is related to in vitro culture of purified human monocytes. More particularly, the present invention is related to the culture of purified human monocytes in suspension in a serum-free medium. Mononuclear phagocytes (monocytes) in their various forms have been shown to participate in many critical phases of the mammalian immune response.

0909 Human SCLC (Small Cell Lung Cancer) Autocrine Growth Factors and Monoclonal Antibody Blocking the Same
F. F. Cuttitta
Department of Health and Human Services, Washington, DC
Filed 29 Mar 85 34p
PAT-APPL-6-717 692 Available from NTIS: price code A03
The present invention relates to human small cell lung cancer (SCLC) autocrine growth factors and monoclonal antibody blocking the same. More particularly, the present invention relates to anti-bombesin monoclonal antibody blocking bombesin-receptor interaction at appropriate binding sites and inhibiting tumor growth dependent on bombesin autocrine function.

0910 Hydrophobic Dental Composites Based on a Polyfluorinated Dental Resin
J. M. Antonucci
Department of Health and Human Services, Washington, DC
Filed 9 Aug 84 34p
PAT-APPL-6-639 673 Available from NTIS: price code A03
The present invention concerns the field of dentistry, and especially relates to improved dental restorations.

0911 Immortal Line of Human Fetal Glial Cells
E. O. Major
National Institutes of Health, Bethesda, MD
Filed 4 Oct 84 36p
PAT-APPL-6-657 630 Available from NTIS: price code A03
The present invention is directed to permanent establishment of an immortal line of human fetal glial cells, more particularly of glial cells which inter alia, support JC virus multiplication.

0912 Immunologically Active Peptides Capable of Inducing Immunization against Malaria and Genes Encoding Therefor
J. B. Dame
Department of the Army, Washington, DC
Filed 26 Jun 84 55p
PAT-APPL-6-624 564 Available from NTIS: price code A04
This invention is related to immunologically active agents capable of inducing immune responses in humans and other animals which result in protection against infection by

malaria parasites and more particularly to the protection of humans against the human malaria parasite Plasmodium falciparum.

Improved Method and Apparatus for the Mass Rearing of Fruit Flies
See 0561

0913 Improved Polyethylene Glycol (PEG) Reagent
G. H. Yoakum
Department of Health and Human Services, Washington, DC
Filed 28 Nov 84 16p
PAT-APPL-6-675 617 Available from NTIS: price code A02
The fusion grade polyethylene glycol (PEG) reagent produced by the process of this invention is a fusion reagent suitable for use in human cell genetic transfection and human/human hybridoma applications.

0914 Indium-111 Labeled Anti-Melanoma Monoclonal Antibodies
S. C. Srivastava, R. A. Fawwaz, S. Ferrone
Department of Energy, Washington, DC
Filed 30 Apr 84 28p
PAT-APPL-6-605 438 Available from NTIS: price code A03
A monoclonal antibody to a high molecular weight melanoma-associated antigen was chelated and radiolabeled with indium-111. This material shows high affinity for melanoma and thus can be used in the detection, localization and imaging of melanoma. 1 figure.

Infrared Optical Measurement of Blood Gas Concentrations and Fiber Optic Catheter
See 0862

0915 Intact Gene and Method of Excising and Cloning Same
T. F. McCutchan, J. B. Dame
National Institutes of Health, Bethesda, MD
Filed 31 Jul 84 29p
PAT-APPL-6-636 261 Available from NTIS: price code A03
The present invention is related to obtaining a functionally intact whole gene directly from a genome, said gene being suitable for expression of gene products. The present invention further relates to a method of excising a complete gene from a genome in a single step and cloning the gene thus obtained.

0916 Intramolecularly Crosslinked Hemoglobin
P. J. Scannon
Department of the Army, Washington, DC
Filed 28 Oct 83, patented 25 Sep 84 3p
PATENT-4 473 496 Available from Comm. of Patents
This invention relates to molecular modification of hemoglobin by utilization of a class of a, omega-dialdelhydes having a chain length of 5 to 7 members and substituted with at least one negatively charged group such as a phosphate moiety. A subject a, omega-dialdehyde can be synthesized by sodium periodate oxidation of a phosphorylated ribose such as adenosine-5'-triphosphate or 5-phosphoribosyl-1-pyrophosphate. The compounds of this invention can be advantageously used for intramolecularly crosslinking hemoglobin for resuscitative purposes.

0917 Isoelectric Focussing-Polynucleotide/ Polyacrylamide Gel Electrophoresis
T. P. Karpetsky, G. E. Brown
Department of Health and Human Services, Washington, DC
Filed 27 Jul 82, patented 22 Jan 85 9p
PATENT-4 495 279 Available from Comm. of Patents
An electrophoresis system which provides enhanced resolution and ability to identify nucleases through use of a two-dimensional technique involving isoelectric focussing of tube gels followed by the electrophoresis of second-dimension slab gels formed by the use of a holder allowing slab gels to be cast directly on the sides of the tube gels. DNA is employed as the substrate for casting the slab gels. The slab gels are electrophoresed for the second dimension in a chamber wherein the rack containing a stack of slab gels forms the partition between the anolyte and catholyte compartments. After the second-dimension electrophoresis, the slab gels are incubated in incubation buffer and placed in Pyronin Y to stain the unhydrolized DNA. After staining, they are destained in acetic acid. The DNAses are then visible as colorless spots in a reddish-colored gel.

0918 Isolated, Soluble Immunogen Against 'Schistosoma mansoni' and a Method of Vaccination Employing Same
S. L. James
Department of Health and Human Services, Washington, DC
Filed 6 Jun 85 37p
PAT-APPL-6-741 600 Available from NTIS: price code A03
The invention is related to an isolated, soluble parasite fraction capable of providing protective immunization against Schistosoma mansoni parasitic infection. More particularly, the present invention is related to a method of inducing protective immunity against Schistosoma mansoni in a host by intradermally administering to said host soluble parasite antigens combined with a suitable adjuvant.

0919 Isolation and Culture of Adrenal Medullary Endothelial Cells Producing Blood Clotting Factor VIII: C
H. B. Pollard
Department of Health and Human Services, Washington, DC
Filed 16 Nov 84 36p*
PAT-APPL-6-672 451 Available from NTIS: price code A03
The present invention discloses a new line of endothelial cell of adrenal medullary origin capable of producing blood clotting Factor VIII:C. A method of isolating and culturing said cell line has also been disclosed. Factor VIII:C is useful in treating hemophilia.

0920 Isolation of Hepatitis A Virus Strain HM-175
R. J. Daemer, S. M. Feinstone, I. D. Gust, R. H. Purcell
Department of Health and Human Services, Washington, DC
Filed 7 Apr 82 6p
PATENT-4 532 215 Available from Comm. of Patents
Human hepatitis A virus (HAV), taken directly from human clinical specimens, can be isolated and serially passaged in primary African green monkey kidney (AGMK) cell cultures. This strain induced antibody to HAV in inoculated chimpanzees and is useful for vaccine.

0921 Lysis of 'Trypanosoma Cruzi'
T. I. Mercado
Department of Health and Human Services, Washington, DC
Filed 6 May 82, patented 2 Oct 84 4p
PATENT-4 474 772 Available from Comm. of Patents
Trypanosoma cruzi, a protozoan parasite and the causative agent of Chagas' disease (producing chronic symptoms such as cardiomyopathy with heart failure and arrythmia), are lysed within 24 hours by an extracellular substance produced by Pseudomonas fluorescens. This substance, anti-trypanosome factor (ATF-II) of a molecular weight approximately 1,000, actively kills the parasites at doses not toxic on mammals such as mice.

0922 Measurement of Visual Contrast Sensitivity
H. E. Von Gierke, A. R. Marko
Department of the Air Force, Washington, DC
Filed 29 Jul 82, patented 16 Apr 85 10p
PATENT-4 511 228 Available from Comm. of Patents
This invention involves measurement of the visual contrast sensitivity (modulation transfer) function of a human subject by means of linear or circular spatial frequency pattern on a cathode ray tube whose contrast is automatically decreasing or increasing depending on the subject pressing or releasing a hand-switch button. The threshold of detection of the pattern modulation is found by the subject by adjusting the contast to values which vary about the subject's threshold thereby determining the threshold and also providing by the magnitude of the contrast fluctuations between reversals some estimate of the variability of the subject's absolute threshold. The invention also involves the slow automatic sweeping of the spatial frequency of the pattern over the spatial frequencies after preset time intervals or after threshold has been defined at each frequency by a selected number of subject-determined threshold crossings; i.e., contrast reversals.

Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056

Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058

Method and Apparatus for the Detection of Toxicants
See 0584

0923 Method and Composition for Luring Coyotes
R. Teranishi, W. E. Howard
Department of Agriculture, Washington, DC
Filed 29 Jul 81, patented 18 Sep 84 7p
PATENT-4 472 377 Available from Comm. of Patents
The method and composition of the invention comprises one or more synthetically prepared, substantially pure compounds effective as odor attractants to lure coyotes.

Method for Detecting Aflatoxin in Almonds
See 0009

0924 Method for Obtaining Periplasmic Proteins from Bacterial Cells Using Chloroform
G. F. Ames, S. G. Kustu
Department of Health and Human Services, Washington, DC
Filed 3 Apr 84, patented 5 Feb 85 3p
PATENT-4 497 730 Available from Comm. of Patents
The present invention discloses a method of extracting periplasmic protein comprising treating a cellular suspension of an organism possessing said periplasmic proteins with a periplasmic protein releasing volume of chloroform for a sufficient time to release said protein and then separating said protein from said cellular suspension.

0925 Method for Rapid DNA (Deoxyribonucleic Acid) Sequencing
K. Mizuacki
Department of Health and Human Services, Washington, DC
Filed 31 Dec 84 28p
PAT-APPL-6-680 992 Available from NTIS: price code A03
The present invention is related to a method of rapid DNA (deoxyribonucleic acid) sequencing. More particularly, the present invention is directed to the use of random insertion of transposons as a part of rapid and convenient process related to DNA sequencing.

Method for Screening Bacteria and Application Thereof for Field Control of Pythium spp. on Small Grain Crops
See 0013

0926 Method for Simultaneously Monitoring Turnover Rate in Multiple Proteins
C. R. Merril, D. Goldman
Department of Health and Human Services, Washington, DC
Filed 27 Feb 84, patented 2 Apr 85 9p
PATENT-4 508 820 Available from Comm. of Patents
The invention provides an assay method for cellular and extracellular protein biodynamics comprising the use of radiochemical techniques in combination with high resolution protein separation procedures and recently developed silver stain techniques, to assess turnover of polypeptides over time. Quenching of polypeptide radiolables in silver stained gels is obviated by the use of (14)C-labelled amino acids as precursors.

Modified Starches as Extenders for Absorbent Polymers
See 0016

0927 Monoclonal Antibodies Reactive with Human Breast Cancer
J. Schlom, D. Colcher, M. Nuti, P. H. Hand, F. Austin
Department of Health and Human Services, Washington, DC
Filed 1 Mar 85 27p
PAT-APPL-6-707 400 Available from NTIS: price code A03
Monoclonal antibodies demonstrating a reactivity with human breast cancer are produced. The hybridoma cultures secreting immunoglobins are produced by hydridoma technology. Splenic lymphocytes of mice, immunized with membrane-enriched fractions of meta-static human mammary carcinoma tissue are fused with the NS-1 non-immunoglobulin-secreting murine myeloma cell line. Screening of immunoglobulin reactivities and double cloning of cultures yielded 11 monoclonal antibodies that demonstrated activities with the surface of human mammary tumor cells and not with the surface of apparently normal human tissues. These monoclonal antibodies aid in the diagnosis, prognosis and treatment of human breast cancer.

0928 Monoclonal Antibodies to Epizootic Hemorrhagic Disease Virus Antigen
M. M. Jochim, S. C. Jones
Department of Agriculture, Washington, DC
Filed 5 Mar 85 18p
PAT-APPL-6-708 613 Available from NTIS: price code A02

A method for preparing hybrid cell lines (hybridomas) which secrete monoclonal antibody which is group-specific to epizootic hemorrhagic disease virus antigen and which does not react to antigenically-related bluetongue virus antigen is disclosed. The antibody identifies EHDV in infected cell cultures with immunofluorescence and provides a means for ready diagnosis of EHDV in animals.

0929 Monoclonal Antibodies to Porcine Immunoglobulins
P. S. Paul, R. A. Van Deusen
Department of Agriculture, Washington, DC
Filed 27 Oct 83, patented 28 Aug 84 6p
PATENT-4 468 346 Available from Comm. of Patents
Monoclonal antibodies which are heavy-chain specific for procine Ig's are secreted by novel hybrid cell lines produced by fusing SP2/O myeloma cells with B-lymphocytes from BALB/c mice immunized against porcine Ig's. The monoclonal antibodies are useful in porcine immunological research and pathological diagnosis.

0930 New Method for the Selective Labeling of Erythrocytes in Whole Blood with Tc-99M
S. C. Srivastava, J. W. Babich, R. Straub, P. Richards
Department of Energy, Washington, DC
Filed 27 Jan 84 13p
PAT-APPL-6-574 486 Available from NTIS: price code A02
Method and kit are described for the preparation of /sup 99m/Tc labeled red blood cells using whole blood in a closed sterile system containing stannous tin in a form such that it will enter the red blood cells and be available therein for the reduction of technetium.

Non-Aqueous Dental Cements Based on Dimer and Trimer Acids
See 0748

0931 Nonabsorbent Roller Applicator
R. A. McKelvey
Department of Agriculture, Washington, DC
Filed 18 Sep 84 12p
PAT-APPL-6-651 563 Available from NTIS: price code A02
The invention describes a roller applicator for treating plants with herbicides and other fluids which comprises a nonabsorbent textured roller, a low-pressure fluid delivery system, and means for collecting and recirculating the fluid. The components of the apparatus act in cooperation with one another so as to minimize loss of material by drippage, spray drift, and holdup in the components of the device. The applicator can be used with solutions as well as wettable powders, emulsifiable concentrates, and other multiphase formulations without separation.

0932 Novel Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
D. A. Carlson, J. R. McLaughlin
Department of Agriculture, Washington, DC
Filed 22 Feb 85 21p
PAT-APPL-6-704 442 Available from NTIS: price code A02
This invention relates to new compounds which mimic insect sex pheromone and are used to disrupt sexual communication between the insects.

Nuclear Medicine Imaging System
See 0869

Osteoclast for Whole Bone Testing
See 0870

0933 Ovipositional Stimulant for Trichogramma Spp
W. C. Nettles, R. K. Morrison, Z. N. Xie, D. Ball, C. A. Shenkir
Department of Agriculture, Washington, DC
Filed 15 Sep 83, patented 27 Nov 84 4p
PATENT-4 484 539 Available from Comm. of Patents
A unique and valuable process for stimulating oviposition in insects is disclosed. Artificial wax eggs containing a salt solution with one or more ions selected from the group consisting of K(/), Mg(2/), Cl(-), and SO4(2-) are fabricated. The concentration of the salt solution is critically designed to be sufficient to stimulate the insects. The insects are brought into contact with the artificial eggs for sufficient time and at sufficient temperature to allow the insects to oviposit their eggs into the salt solution as a result of the stimulus of the solution.

0934 Palladium-109 Labeled Anti-Melanoma Monoclonal Antibodies
S. C. Srivastava, R. A. Fawwaz, S. Ferrone
Department of Energy, Washington, DC
Filed 30 Apr 84 12p
PAT-APPL-6-605 439 Available from NTIS: price code A02
The invention consists of new monoclonal antibodies labelled with Palladium 109, a beta-emitting radionuclide, the method of preparing this material, and its use in the radiotherapy of melanoma. The antibodies are chelate-conjugated and demonstrate a high uptake in melanomas.

Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxbenzenes in Insect Population Control
See 0072

0935 Preparation of Pellets Containing Fungi and Nutrient for Control of Soilborne Plant Pathogens
J. A. Lewis, G. C. Papavizas, W. J. Connick
Department of Agriculture, Washington, DC
Filed 28 Jun 85 25p
PAT-APPL-6-749 906 Available from NTIS: price code A02
The invention relates to a method for preparing pellets containing living biocontrol fungi and nutrient dispersed throughout. Living fungi are selected and grown for inoculum. The fungal propagules and wheat bran are added to a sodium alginate solution. The fungal propagule-alginate bran mixture is added dropwise into a solution of calcium chloride. The resultant alginate gel pellets containing living fungi can be dried and used to inoculate agricultural fields infested with soilborne diseases.

0936 Preparation of Stroma-Free, Non-Heme Protein-Free Hemoglobin
R. W. Tye
Department of the Army, Washington, DC
Filed 4 May 83 4p
PATENT-4 473 494 Available from Comm. of Patents
A method for the production of stroma-free, non-heme protein-free hemoglobin by use of zinc ion to promote precipitation of a zinc ion-bound insoluble hemoglobin complex, followed by membrane ultrafiltration of the zinc-hemoglobin complex from the filtrate fluid medium, preferably with a saline dialyzate.

Prevention of Graft Versus Host Disease Following Bone Marrow Transplantation
See 0892

0937 Process for Enhanced Fermentation of Xylose to Ethanol
T. W. Jeffries
Department of Agriculture, Washington, DC
Filed 14 Sep 84 10p
PAT-APPL-6-650 462 Available from NTIS: price code A02
This invention relates to a process for the production of ethanol by enhanced fermentation of xylose.

0938 Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
J. Schlom, D. Colcher, M. Nuti, P. H. Hand, F. Austin
Department of Health and Human Services, Washington, DC
Filed 15 Dec 81, patented 11 Jun 85 9p
PATENT-4 522 918 Available from Comm. of Patents
Monoclonal antibodies demonstrating a reactivity with human breast cancer are produced. The hybridoma cultures secreting immunoglobins are produced by hydridoma technology. Splenic lymphocytes of mice, immunized with membrane-enriched fractions of metastatic human mammary carcinoma tissue are fused with the NS-1 non-immunoglobulin-secreting murine myeloma cell line. Screening of immunoglobulin reactivities and double cloning of cultures yielded 11 monoclonal antibodies that demonstrated activities with the surface of human mammary tumor cells and not with the surface of apparently normal human tissues. These monoclonal antibodies aid in the diagnosis, prognosis and treatment of human breast cancer.

0939 Process for Site-Specific Mutagenesis without Phenotypic Selection
T. A. Kunkel
Department of Health and Human Services, Washington, DC
Filed 25 Jun 84 23p
PAT-APPL-6-623 923 Available from NTIS: price code A02
The present invention discloses several DNA mutagenesis processes using a DNA template containing several uracil residues in place of thymine, which can be applied without selection techniques to produce altered DNA sequences with approximately 10-fold greater efficiency than current methods of site-specific mutagenesis.

Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0793

Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0794

0940 Production of Human T-Cell Leukemia (Lymphotropic) Retrovirus (HTLV-I) Envelope Protein Fragments in Bacteria and Use in Seroepidemiological Survey of Human Lymphoid Malignancies
T. S. Papas, K. Samuel, J. A. Lautenberger, F. Wong-Staal
Department of Health and Human Services, Washington, DC
Filed 26 Oct 84 15p
PAT-APPL-6-664 972 Available from NTIS: price code A02

0941 Pseudomonas Exotoxin Conjugate Immunotoxins
I. Pastan, M. C. Willingham, D. J. Fitzgerald
Department of Health and Human Services, Washington, DC
Filed 26 Jan 84 24p
PAT-APPL-6-574 173 Available from NTIS: price code A02
A method of modifying Pseudomonas exotoxin (PE) with methyl-4-mercaptobutyrimidate is disclosed so that after conjugating the exotoxin to a monoclonal antibody (ab) such as the antibody to the transferrin receptor, the PE-ab conjugate becomes a highly potent immunotoxin suitable for use against human tumor cells. This same method has been used to conjugate PE to epidermal growth factor (EGF) to create a highly potent growth factor-toxin conjugate for use against cells having large numbers of EGF receptors.

Purification of Uromodulin
See 0893

0942 Purified Antigen from Non-A, Non-B Hepatitis Causing Factor
B. Seto
National Institutes of Health, Bethesda, MD
Filed 8 Mar 85 28p
PAT-APPL-6-709 678 Available from NTIS: price code A03
The present invention is directed to isolation, purification and characterization of a specific serologic marker for non-A, non-B hepatitis (NANBH). More particularly, the present invention is related to obtaining an isolated, purified antigen associated with non-A, non-B hepatitis causing factor for use in in vitro detection kits and for use as a vaccine against NANBH.

0943 Quarantine System for Papaya
H. M. Couey, C. F. Hayes
Department of Agriculture, Washington, DC
Filed 22 Jul 85 53p
PAT-APPL-6-757 396 Available from NTIS: price code A04
A novel system to ensure that papaya are free of fruit flies so as to meet quarantine restrictions is described. Papaya are subjected to selection on the basis of color in combination with a two-stage heated fluid treatment wherein time and temperature of the treatment are maintained within narrowly defined parameters. With this system, excellent fruit quality is maintained. The system is suitable for commercial use.

Random Pattern Tracking Acceleration Tolerance Tester
See 0615

0944 Rapid Bioassay and a Kit for Peptide Hormones
M. L. Dufau
Department of Health and Human Services, Washington, DC
Filed 25 Mar 85 39p
PAT-APPL-6-715 332 Available from NTIS: price code A03
The present invention is related to a rapid bioassay system and a kit for peptide hormones. More particularly, the present invention is directed to a simple method for measurement of biologically active levels of peptide hormones in serum or plasma from humans and other species and also in incubation media from cells in monolayer culture or in suspension.

Rope Wick Applicator
See 0022

0945 Screening Test for Reverse-Transcriptase Containing Virus
B. Seto
Department of Health and Human Services, Washington, DC
Filed 26 Oct 84 24p
PAT-APPL-6-665 400 Available from NTIS: price code A02
The present invention relates to a screening test for detecting the presence of reverse-transcriptase containing virus in blood, blood products or in any source containing such virus. More particularly, the present invention relates to the detection and diagnosis of non-A, non-B hepatitis in blood donors by determining the presence of reverse transcriptase activity in the body fluid, preferably in a blood bank setting.

0946 Sensitive and Rapid Diagnosis of Viroid Diseases and Viruses
R. A. Owens, T. O. Diener
Department of Agriculture, Washington, DC
Filed 3 Dec 81, patented 30 Oct 84 8p
PATENT-4 480 040 Available from Comm. of Patents
The invention is a rapid and sensitive method for diagnosing plant viroid diseases and viruses. Plant sap is bound to a solid support and the bound sample probed with a radioactively labelled DNA that is complementary to the viroid or to the nucleic acid of the virus being diagnosed. The radioactively labelled cDNA hybridizes with that viroid or virus RNA or DNA for which it is specific. DNA-RNA and DNA-DNA hybrids are detected by autoradiographic examination of the hybridized material.

0947 Silver Stains for Protein in Gels-A Modified Procedure
J. H. Morrissey
Department of Health and Human Services, Washington, DC
Filed 16 Feb 82, patented 28 Aug 84 6p
PATENT-4 468 466 Available from Comm. of Patents
In a silver stain method for protein in gels utilizing treatment with a reducing agent followed by treatment with a silver salt and actuating irradiation, the improvement comprising the use of a reducing agent consisting essentially of dithiothreitol in an amount effective to stain the protein but keep background staining to a minimum.

0948 Strain of 'Trichoderma viride' to Control Fusarium Wilt
G. C. Papavizas
Department of Agriculture, Washington, DC
Filed 25 Oct 82, patented 18 Dec 84 6p
PATENT-4 489 161 Available from Comm. of Patents
The invention is a new strain of the fungus Trichoderma viride designated as T-1-R9 is described. The new strain is an effective biocontrol agent for fusarium wilt of chrysanthemum.

Suture Needle Holder
See 0878

Synthetic Peptides for the Production of Specific Keratin Proteins
See 0087

Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

0949 T-Cell Receptor-Specific for Antigen Polypeptides and Related Polynucleotides
D. Hedrick
Department of Health and Human Services, Washington, DC
Filed 1 Mar 84 28p
PAT-APPL-6-585 333 Available from NTIS: price code A03
Oligonucleotide sequences are provided coding for T-cell-specific antigenic receptors or fragments thereof. The oligonucleotide sequences can be used as probes for detecting helper and cytotoxic T-cells, preparing and isolating DNA sequences encoding for the receptor polypeptide, and in constructions for expression of receptor polypeptides or fragments thereof. In addition, processing signals can be employed in conjunction with modified wild-type oligonucleotide sequences or foreign oligonucleotide sequences.

0950 Therapeutic and Diagnostic Monoclonal Antibody Specific for Human T-Cell Leukemia Virus Type 1 Envelopes Protein
S. Broder, S. Matsushita, M. Robert-Guroff
Department of Health and Human Services, Washington, DC
Filed 29 Mar 85 19p
PAT-APPL-6-717 613 Available from NTIS: price code A02
The present invention is an immortalized B-cell line which produces a human monoclonal antibody IgG-Kk which specifically binds to the envelope antigen of human T-cell leukemia virus Type 1 (HTLV-I). This monoclonal antibody is useful as a diagnostic reagent by binding to the antigen specifically expressed of the surface of HTLV producing cells. Furthermore, this monoclonal antibody is useful as a therapeutic reagent, in combination with complement, for the lysis of HTLV-1 producing cells.

Topical Prophylaxis against Schistosomal Infections
See 0025

0951 Vaccine Against Neisseria Meningitidis Group B Serotype 2 Invasive Disease
C. Frasch
Department of Health and Human Services, Washington, DC
Filed 1 May 85 29p
PAT-APPL-6-729 206 Available from NTIS: price code A03
The patent application is directed to a vaccine against Neisseria meningitidis Group B, serotype 2. More particularly, the present invention is related to an aluminum hydroxide adjuvanted vaccine containing only a single serotype 2 antigen but being protective against both 2a and 2b meningococcal disease.

0952 Vaccine against Rotavirus Diseases
D. Wyatt
Department of Health and Human Services, Washington, DC
Filed 26 Aug 85 23p
PAT-APPL-6-769 074 Available from NTIS: price code A02
The present invention is related to a vaccine against rotavirus diseases. More particularly, the invention is related to the use of a live rhesus rotavirus attenuated in humans and

which can be used as a vaccine in humans to prevent or control diseases caused by human rotaviruses.

0953 Water Toxicity Field Test System
T. Novinson
Department of the Navy, Washington, DC
Filed 11 Jun 84 8p
PAT-APPL-6-619 507 Available from NTIS: price code A02
A method and an apparatus are described for testing water toxicity. Mamalian primate cells are treated with the water sample being tested and the effect is observed. A monolayer of the cells are kept alive with nutrients until needed for the test. The test water is injected into the sealed unit by means of a syringe inserted through a sterile rubber septum. A magnifier is used for observing the effect of the test water on the cells.

MINING

0954 Extensible Brattice Support System for Mine Face Ventilation
E. F. Divers, J. C. Lascola, R. G. Behers
Department of the Interior, Washington, DC
Filed 8 Mar 83, patented 22 Jan 85 5p
PATENT-4 494 894 Available from Comm. of Patents
A mobile support system for an underground mine brattice curtain which extends the ventilation control of a conventional line brattice. Three embodiments are disclosed for the support system utilizing different fulcrums. In the preferred embodiment, the support's fulcrum is made up of two identical spaced semicircular skid plates which engage the floor and rockably support a first inclined rigid beam. This first beam is pivotally attached to a cantilevered generally horizontal roof engaging upper support at its inby side and has a foot engaging section on its outby side. A second rigid beam extends upwardly from the first beam towards the outby side of the upper support and is pivotally attached to the first beam. The other end of the second beam is a free end which can engage an indexing member on the lower outby end of the upper support. An impervious air curtain depends from the upper support along its length and along with the upper support can be moved to engage the roof. The floor engaging fulcrums in the two other embodiments are either two spaced circular plates or a conventional roof jack.

0955 Hydraulic Mining Method
L. H. Huffman, G. S. Knoke
Department of Energy, Washington, DC
Filed 15 Jun 84 17p
PAT-APPL-6-621 294 Available from NTIS: price code A02
A hydraulic mining method includes drilling a vertical borehole into a pitched mineral vein and a slant borehole along the footwall of the vein to intersect the vertical borehole. Material is removed from the mineral vein by a fluid jet stream and the resulting slurry flows down the footwall borehole into the vertical borehole from where it is pumped upwardly therethrough to the surface.

0956 Longwall Shearer Tracking System
P. D. Poulsen, R. J. Stein, R. E. Pease
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center
Filed 15 Nov 82, patented 21 Aug 84 13p
PATENT-4 466 667 Available from Comm. of Patents
A tracking system for measuring and recording the movements of a longwall shearer vehicle includes an optical tracking assembly carried at one end of a desired vehicle path and a retroreflector assembly carried by the vehicle. Continuous horizontal and vertical light beams are alternately transmitted by means of a rotating Dove prism to the reflector assembly. A vertically reciprocating reflector interrupts the continuous light beams and converts these to discrete horizontal and vertical light beam images transmitted at spaced intervals along the path. A second rotating Dove prism rotates the vertical images to convert them to a second series of horizontal images while the first mentioned horizontal images are left unrotated and horizontal. The images are recorded on a film.

0957 Machine for Mixing and Injecting Water and Grout into a Roof Bolt Hole
R. E. Simpson
Department of the Interior, Washington, DC
Filed 10 Jul 80, patented 5 Feb 85 7p
PATENT-4 497 578 Available from Comm. of Patents
An apparatus in which grout is extruded from the same chamber in which mixed. Provision is made to clean the system after it has undergone one cycle of mixing and extrusion. The basic components of the apparatus include a mixing chamber with a mixing ram having collapsible mixing fingers. Encircling this mixing ram is an extruding ram with a ram head. The mixing ram is concentric with and extends through a lower extruding ram cylinder with the upper portion of the mixing ram having a mixing head normally seated in the mixing chamber and concentric with the ram head. Provision is made to bring water into the mixing chamber, to insert grout in the same chamber, and to outlet the water and grout from the same.

Method for Controlled Burnout of Abandoned Coal Mines and Waste Banks
See 0416

0958 Method for Determining Depth and Shape of a sub-Surface Conductive Object
D. O. Lee, P. C. Montoya, J. R. Wayland
Department of Energy, Washington, DC
Filed 27 Jun 84 20p
PAT-APPL-6-625 321 Available from NTIS: price code A02
The depth to and size of an underground object may be determined by sweeping a controlled source audio magnetotelluric (CSAMT) signal and locating a peak response when the receiver spans the edge of the object. The depth of the object is one quarter wavelength in the subsurface media of the frequency of the peak. 3 figures.

0959 Method of Enhancing the Removal of Methane Gas and Associated Fluids from Mine Boreholes
M. A. Trevits, R. L. King, G. L. Finfinger
Department of the Interior, Washington, DC
Filed 9 Sep 82, patented 2 Oct 84 7p
PATENT-4 474 409 Available from Comm. of Patents
The method disclosed herein relates to the removal of unwanted gases and associated fluids in underground mining operations by utilizing mine boreholes. After the mine borehole has been drilled its desired distance from the mine face, an inflatable packer assembly is inserted therein and placed to the end remote from the mine face.

0960 Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
D. O. Lee, P. C. Montoya, J. R. Wayland
Department of Energy, Washington, DC
Filed 30 Mar 84 17p
PAT-APPL-6-595 011 Available from NTIS: price code A02
A method for enhancing the resistivity contrasts of a thermal front in an oil recovery production field as measured by the controlled source audio frequency magnetotelluric (CSAMT) technique is disclosed. This method includes the steps of: (1) preparing a CSAMT-determined topological resistivity map of the production field; (2) introducing a solution of a dopant material into the production field at a concentration effective to alter the resistivity associated with the thermal front; said dopant material having a high cation exchange capacity which might be selected from the group consisting of montmorillonite, illite, and chlorite clays; said material being soluble in the conate water of the production field; (3) preparing a CSAMT-determined topological resistivity map of the production field while said dopant material is moving therethrough; and (4) mathematically comparing the maps from step (1) and step (3) to determine the location of the thermal front. This method is effective with the steam flood, fire flood and water flood techniques.

0961 Production of Lead from Sulfides
E. R. Cole, A. Y. Lee, D. L. Paulson
Department of the Interior, Washington, DC
Filed 20 Jun 84, patented 19 Feb 85 5p
PATENT-4 500 398 Available from Comm. of Patents
Lead is recovered from sulfide ores which contain lead by leaching the ore with fluosilicic acid to form elemental sulfur and lead fluosilicate, and then subjecting the lead fluosilicate to electrolysis to produce lead and fluosilicic acid.

0962 Prospecting by Sampling and Analysis of Airborne Particulates and Gases
G. A. Sehmel
Department of Energy, Washington, DC.*Department of Energy, Washington, DC
Filed 1 May 84 9p
PAT-APPL-6-606 036 Available from NTIS: price code A02
A method is claimed for prospecting by sampling airborne particulates or gases at a ground position and recording wind direction values at the time of sampling. The samples are subsequently analyzed to determine the concentrations of a desired material or the ratios of the desired material to other identifiable materials in the collected samples. By comparing the measured concentrations or ratios to expected background data in the vicinity sampled, one can select recorded wind directions indicative of the upwind position of the land-based source of the desired material.

Remote Sequential Gas Sampler for Blasting Areas
See 0618

0963 Self-Actuating Vacuum Gas/Liquid Separator
A. A. Campoli, F. Garcia
Department of the Interior, Washington, DC
Filed 25 Apr 83, patented 19 Feb 85 7p
PATENT-4 500 329 Available from Comm. of Patents
A self-actuating gas/liquid separator which depends on the counterbalancing of the liquid in a closed container in excess of a certain height and the vacuum gas pressure for its actuation and operation. Primarily this invention was directed to the separation of water and methane gas after they are discharged from an inclined coal mine drainage bore hole.

0964 Short Range Trapped Miner Locator
W. E. Webb, R. H. Church
Department of the Interior, Washington, DC
Filed 8 Mar 83, patented 1 Jan 85 4p
PATENT-4 491 971 Available from Comm. of Patents
A short range, low power, radio wave transmitter which acts as a miner locato r. The transmitter is incorporated with the cap lamp circuitry for the miner. It utilizes the same self-contained power source and its wire connection thereto acts as the transmitter's antenna. No action on the miner's part is necessary in order to begin the transmission which may be on a specific identifying frequency for each miner. An electronic crowbar circuit may be used to conserve power for the transmitter by cutting off power to the cap lamp should the voltage across the self-contained power source fall below a preset level. This enables the transmitter to function for several days by reducing the load on the power source.

0965 Shuttle Car Loading System
E. R. Collins
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 14 Jan 83, patented 27 Aug 85 8p
PATENT-4 537 554 Available from Comm. of Patents
A system is described for loading newly mined material such as coal, into a shuttle car, at a location near the mine face where there is only a limited height available for a loading system. The system includes a storage bin having several telescoping bin sections and a shuttle car having a bottom wall that can move under the bin. With the bin in an extended position and filled with coal the bin sections can be telescoped to allow the coal to drop out of the bin sections and into the shuttle car, to quickly load the car. The bin sections can then be extended, so they can be slowly filled with more while waiting another shuttle car.

0966 Universal Ripper Miner
R. J. Morrell, D. A. Larson
Department of the Interior, Washington, DC
Filed 3 Jan 83, patented 26 Feb 85 10p
PATENT-4 501 448 Available from Comm. of Patents
A universal ripper miner used to cut, collect, and transfer material from an underground mine working face. The cutter head has a single large cutting bit attached to its periphery and moves in an arcuate cutting motion in a cycle less than 270 degrees. Drive members, such as hydraulically actuated pistons, provide for this movement of the head/bit. Constructed as part of the cutting head adjacent to the bit, a hopper-type member with a partially opened upper section acts to continuously collect and transfer cut material from the mine face. A mechanically or gravity actuated door is at the end of this hopper member remote from the cutting head allows the cut material to be transferred to a lower conventional material handling system. The cutter head and its mounted frame can be moved in a direction perpendicular to the direction of the cutting head during its cutting cycle to allow a new adjacent cutting cycle to be performed. Also, after a desired number of cycles have taken place, the frame and cutting head can be advanced into the mine working face by a third power source.

0967 Wireless Remote Liquid Level Detector and Indicator for Well Testing
G. E. Fasching, D. M. Evans, J. H. Ernest
Department of Energy, Washington, DC
Filed 9 Jan 84 15p
PAT-APPL-6-569 087 Available from NTIS: price code A02
An acoustic system is provided for measuring the fluid level in oil, gas or water wells under pressure conditions that does not require an electrical link to the surface for level detection. A battery powered sound transmitter is integrated with a liquid sensor in the form of a conductivity probe, enclosed in a sealed housing which is lowered into a well by means of a wire line reel assembly. The sound transmitter generates an intense identifiable acoustic emission when the sensor contacts liquid in the well. The acoustic emissions propagate up the well which functions as a waveguide and are detected by an acoustic transducer. The output signal from the transducer is filtered to provide noise ejection outside of the acoustic signal spectrum. The filtered signal is used to indicate to an operator the liquid level in the well has been reached and the depth is read from a footage counter coupled with the fire line reel assembly at the instant the sound signal is received. 3 figures.

NAVIGATION & GUIDANCE

0968 Dual Mode Radio Frequency-Infrared Frequency System
C. T. Brumbaugh, R. L. Pittenger, R. M. Klees
Department of the Air Force, Washington, DC
Filed 2 Aug 82, patented 16 Oct 84 8p
PATENT-4 477 814 Available from Comm. of Patents
A combined RF/IR system in which a common surface is used the dual modes of radiating and absorbing RF energy and of reflecting and focusing IR energy. The common surface is structured, configured, and used as the slotted array antenna for the RF energy and as the primary mirror of a Cassegrain optical subsystem for the IR energy.

0969 Fiber Optic Gyroscope with Alternating Output Signal
S. C. Rashleigh
Department of the Navy, Washington, DC
Filed 22 Apr 82, patented 1 Jan 85 11p
PATENT-4 491 413 Available from Comm. of Patents
A Sagnac rotation sensing interferometer that uses a Mach-Zehnder interferometer to provide incident light beams that counter-propagate through an optical-fiber loop. The Sagnac interferometer operates at maximum sensitivity for zero rotation rates when the Mach-Zehnder is adjusted so that the intensities of the incident light beams are equal. By peiodically varying the position of a mirror in the Mach-Zehnder the interferometer is switched into and out of quadrature so that the amplitude of the interferometer output signal is modulated at frequency f sub o. Phase sensitive detection at 2F sub o or multiples thereof reduces the background noise level several orders of magnitude below the level for dc operation.

0970 Gyro Sensor Block Suspension
A. Cangialosi
Department of the Navy, Washington, DC
Filed 7 Nov 83 9p
PAT-APPL-6-549 019 Available from NTIS: price code A02
Provides a suspension mount for a gyro sensor block suspension eliminates dither cross-talk in a gyro triad having a set of common gyros with the same dither tuned suspension. A sensor block has three gyro mount locations situated such that, when attached, the gyro triad is mutually orthonogal to each other. Two of the gyro mount locations have a spring suspension, each of a different stiffness, formed by joining a central hub, to which the gyro is attached, with the sensor block mass via a plurality of spokes to form a torsional spring about the gyro dither axis.

0971 Phanton Computer Gating System
F. A. Dexter
Department of the Navy, Washington, DC
Filed 29 Jan 82, patented 17 Jul 84 6p
PATENT-4 459 935 Available from Comm. of Patents
A system for gating a computer to receive navigational information from the position sensors of the periscope assembly of a submarine is disclosed. A first coil is connected as the load coil of an oscillator and is mounted in a stationary position on a submarine bulkhead. A second coil is secured to the periscope assembly and moves up and down with the periscope, in and out of magnetic coupling with the first coil. A third coil is secured to the periscope assembly and moves up and down with the periscope assembly. A fourth coil is secured to the rotatable periscope assembly and remains magnetically coupled to the third coil while the periscope is either rotated or moved up and down. A normally opened switch button on the periscope handle is electrically connected to the fourth coil. Depression of the switch button results in a load on the oscillator which is otherwise normally tuned to the same frequency as a second oscillator. Loading of the first oscillator coil causes the first oscillator to operate at a different frequency from the second oscillator.

0972 Phase Sensitive Guidance Sensor for Wire-Following Vehicles
G. R. Hansen
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 30 Oct 81, patented 18 Sep 84 7p
PATENT-4 472 716 Available from Comm. of Patents
A guidance sensor for a wire-following vehicle which is phase sensitive, includes an array of coils positioned to sense the vertical component of a magnetic field produced by the ac current through the guidance wire. The outputs of the coils are fed to associated flip flops. Flip flops associated with coils, through which flux passes in one direction, e.g., up, are driven to one state, e.g., true, and flip flops associated with coils through which flux passes in the opposite direction, e.g., down, are driven to a false state. The control signal to guide the vehicle over the wire is a function of the number of flip flops in the true state. Circuitry is included to prevent flip flops from assuming a wrong state due to noise.

0973 Polaris Guidance System
E. C. Hall, J. D. Sabo, S. A. Forter, R. R. Ragan, J. H. Laning
Department of the Navy, Washington, DC
Filed 22 Oct 65, patented 11 Sep 84 55p
PATENT-4 470 562 Available from Comm. of Patents
This patent discloses a inertial guidance system for a rocket powered ballistic missile which provides navigation and control while the missile is proceeding in its flight trajectory. Signals are generated within the confines of the missile and without outside information representative of

angular and linear motion of the missile with respect to an inertial frame of reference, a digital computer compares these signals a preset parameter stored in the computer to provide control signals along the pitch and yaw axes. An autopilot uses these control signals to provide mechanical and control movements, and an exhaust nozzle deflection arrangement connected to the autopilot deflects the exhaust of the rocket for guidance along a predetermined flight trajectory.

Precise Bearing Support Ditherer
See 0679

0974 Transdigitizer for Relaying Signals from Global Positioning System (GPS) Satellites
E. E. Westerfield
Department of the Air Force, Washington, DC
Filed 31 Oct 84 25p
PAT-APPL-6-666 784 Available from NTIS: price code A02
The reception, downconversion and retransmission of the 1575.42 MH2 Global Positioning System (GPS) satellite signal is accomplished by the following. First, an RF stage comprising of an antenna, filter and preamplifier receiver, filters and amplifies the 1575.42 MHz signals. Following the RF stage, a converter stage, consisting of a bandpass filter, converts the GPS signal to a lower frequency. Then, an Intermediate Frequency (IF), comprising an IF amplifier, multiplier, bandpass filter and limiter further amplifies and filters the signals to remove the effects of the signals. A final downconverter converts the signal to a base band frequency and in a zero crossing detector the signal to a base band frequency and in a zero crossing detector the signal is amplified and 1 bit quantized. Finally, a local oscillator controls a frequency synthesizer to latch the signal from the zero crossing detector in a flip flop, which in turn is used to control a quadraphase monitor, whose signals are amplified and transmitted out the transmit antenna.

0975 Transient Test of Suspension Electronics for Gyroscope
P. H. Ito
Department of the Air Force, Washington, DC
Filed 8 Jul 85 48p
PAT-APPL-6-752 767 Available from NTIS: price code A03
The rotor suspension electronics of an electrostatic gyro suspension system is required to perform flawlessly to sustain the life of the gyro. Transient abnormalities as short as one millisecond duration will cause the spinning rotor to come in contact with the surrounding electrodes and result in destruction of the gyro. Thus, not infrequently after a catastrophic dropped rotor incident no trace of the fault is evident upon ensuing check of the system. To remedy this problem a built in test (BIT) system is used to provide fault isolation. The test circuitry is built into the navigation system electronics and integrated with the system program. The fault isolation electronics comprise sensor circuits to monitor functional subdivisions of the electronic suspension system for signal abnormality and a processing circuit which receives the sensor circuit outputs and identifies the primary source of the fault. The faults are detected and the source is flagged at the time of occurrance. The output of the fault isolation electronics is a latched coded readout which is fed to the navigation computer for memory storage and any appropriate follow-up system action, such as power shutdown. After initialization by the computer, the fault isolation function is an automatic operation by the electronic circuitry.

PHOTOGRAPHY & RECORDING DEVICES

0976 Apparatus and Circuits for Two-Color Printing in Electronic Impact Printers
J. Prager, N. H. Hudson
Department of the Army, Washington, DC
Filed 14 Nov 75, patented 14 Feb 78 18p
PATENT-4 073 371 Available from Comm. of Patents
Color control means for selectively positioning one color of a two-color ribbon between a document supporting platen and a print head having means for selectively impacting the desired ribbon portion against the document, said color control means comprising a color-select solenoid energized by logic circuitry responsive to a print-color signal. The solenoid is energized to a first position to enable characters of a first color to be printed at selected positions along a line. The logic circuitry includes means for selectively deleting the line feed, and delaying the print enable and print head movement signals during a time interval sufficient to allow for the color select solenoid to move the ribbon to the opposite color position at which time the characters of the opposite color are printed. A modification of the logic circuitry enables a dot-matrix impact printer capable of printing in both the forward and reverse directions to print a single line of intermixed characters of first and second colors in a somewhat similar fashion.

0977 Dot Matrix Color Printer
S. L. Everett
Department of the Army, Washington, DC
Filed 22 Mar 85 17p
PAT-APPL-6-714 784 Available from NTIS: price code A02
Apparatus for implementing a multi-color printout capability with respect to a dot matrix printer and the like. The apparatus is comprised of an ink reservoir system which includes individual ink reservoirs for replenishing ink of a selected color from a reservoir to individual sections of ink transfer material. The sections are mounted in tandem pairs on elongated ink transfer material holding members which are reciprocally moved linearly back and forth beneath the print head and across the face of a printing medium by a solenoid actuated cam. Each reservior is continuously in contact with respective section of ink transfer material.

Dynamic Pressure Test Unit-Ratio Method
See 0527

0978 Extracting Digital Data from a Bus and Multiplexing It with a Video Signal
D. O. Haque
Department of the Air Force, Washington, DC
Filed 30 Oct 84 71p
PAT-APPL-6-666 511 Available from NTIS: price code A04
A television video data instrumentation recording system is coupled to a Bus Monitor/Video Encoder to incorporate a digital data recording capability within the normal video signal recording process while allowing for later digital data recovery during video playback. The digital data is acquired from a device addressable serial data bus which is normally an asynchronously polled system for exchanging data mes-

sages between a bus master device and multiple slave devices where each slave device has a unique device identification code for its messages. Data acquisition is a passive function (relative to the data bus) involving the hardware programmable selection of messages of interest (based on the message device code) and the software programmable deletion of messages that contain no data of interest. Another feature of data acquisition is that a time-of-acquisition is appended messages of interest. This approach also intercepts the video signal between the television source and the recording system, programmably assembles the acquired data messages into recording data blocks synchronized to the video signal.

Fall Velocity Indicator/Viewer
See 0535

Method and Apparatus for High Speed, Sustained Recording of Infrared Laser Beam Patterns
See 1010

0979 Multi-Track Optical Shaft Position and Timing Cylinder
S. Everett
Department of the Army, Washington, DC
Filed 29 Mar 85 16p
PAT-APPL-6-717 990 Available from NTIS: price code A02
A shaft position, direction and timing assembly for a stepper motor in an electrically controlled printing system operating in an environment subjected to relatively strong vibrational and shock levles is disclosed. A cyclindrical coding member having one or more photo-optical coding tracks located adjacent one edge is mounted on the stepper motor shaft by being held in position by an inner support cylinder and an outer retaining collar. These three elements are commonly fastened to the stepper motor shaft by a pair of mutually opposing set screws. Photo emitter and receptor elements contained in a bifurcated subassembly are located at the edge of the cylindrical coding so as to oppose a coding pattern formed on the coding tracks for generating an electrical signal in response to the coding pattern acting to pass or interrupt light energy transmitted from the emitter to the receptor elements.

0980 Optical Disc Transport System
A. P. Gilson
Department of the Air Force, Washington, DC
Filed 19 Apr 83, patented 21 May 85 7p
PATENT-4 519 055 Available from Comm. of Patents
A carrousel disc transport system has a donut shaped cartridge storage module, a changer and a record/read station. The changer is centrally located in said donut shaped module and selectively removes or replaces selected cartridges. A carrier of the changer has a carriage that is translated along a ball screw to be positioned over the storage module. A pair of transporting arms connected to drive means engages the selected cartridge in the module. The driving means of the ball screw transfer the carriage with the arms to move the cartridge to a transfer location where a second transporting means moves the cartridge to the record/read station. The reverse is required to replace the selected cartridge in the module.

0981 Optically Controlled Multi-Color Impact Printer
S. L. Everett
Department of the Army, Washington, DC
Filed 8 Apr 85 12p
PAT-APPL-6-721 096 Available from NTIS: price code A02
An inherently rugged multi-color dot matrix impact printer has a yoke-type optical code detector assembly mounted on the neck portion of an impact dot matrix print head through which a multi-colored print ribbon passes. The print ribbon is configured in alternating vertical segments of selected colors of ink which have top and bottom photo-optical code regions on the outer edge of the ribbon. Coding comprises the presence or lack of an aperture in the form of a hole which is adapted to pass light therethrough and which is aligned with each ink segment. The yoke additionally includes upper and lower light emitter/sensor pairs for sensing the coded aperture pattern to control the presence of a predetermined colored segment of printing ribbon in front of the print head.

0982 Photo-Reconnaissance System
J. E. Verdier
Department of the Air Force, Washington, DC
Filed 9 Feb 82, patented 10 Apr 84 6p
PATENT-4 442 453 Available from Comm. of Patents
A photo-reconnaissance system is disclosed in which the landscape is photographed on film. The film is then developed and scanned by electro-optical sensors. The output signal from the E-O sensors is transmitted to a ground station where it is demultiplexed and displayed on a plurality of television type monitors. An operator can view the reconnaissance scene in near-real time and transmit commands back to the airborne station directing a change in flight course or a magnification of a particular target. A permanent record of the reconnaissance scene can be obtained either from the on-board film or by making a print from the television type montiors.

0983 Polarimetric Image Recorder
I. Schneider, C. S. Guenzer
Department of the Navy, Washington, DC
Filed 6 Jul 82, patented 25 Dec 84 8p
PATENT-4 490 016 Available from Comm. of Patents
This patent discloses a polarimetric image recorder which records only the net polarization of the viewed scene. An optical lens system projects the light originating from the viewed scene onto a thin layer of an alkali halide crystal containing anisotropic color centers. Polarized light reorients the color centers and creates a net polarization in the layer. The net polarization of the layer is read by such means as shining polarized light through the layer and then through a polarizer set perpendicularly to the polarization of the light source. Whatever light is viewed through the reader represents a net polarization in the scene.

0984 Positioning of a Multicolor Ribbon
M. Gruener, W. Hendrischk
Department of the Army, Washington, DC
Filed 13 Apr 81, patented 26 Jul 83 4p
PATENT-4 395 148 Available from Comm. of Patents
A pivoted ink ribbon guide in front of a matrix print head is positioned by a lever linkage which translates the four different combinations of energization stages of two solenoids into four different alignment positions for a multi-colored ink ribbon.

0985 Printing Apparatus
J. S. Heath
Department of the Army, Washington, DC
Filed 11 Jun 79, patented 28 Jul 81 9p
PATENT-4 280 767 Available from Comm. of Patents
Printing apparatus, in particular for performing multi-color printing operations, has a ribbon shift mechanism for selec-

tively interposing different transversely spaced portions of a print ribbon between a print head and platen. The print head is of the impact type and probably, although not necessarily, of the type which moves along the platen to define a print row. When color printing is required, a ribbon having a plurality of longitudinally extending stripes of different colors transversely spaced across its width is used. Selection of required portions or colors of the ribbon is performed by moving the head to pre-selected positions along the print row to engage, for example, a camming mechanism (including a cam and follower) which moves the shift mechanism the required amount to make the selection. Selection of the ribbon portion or color is by program control and in the case of color printing, the range of colors is increased by superimposed printing of the available colors on the print ribbon.

Remote Self-Contained Undersea Monitor
See 0736

0986 Serial Impact Printer for Multicolor Printing
M. Jozuka, K. Ohmura
Department of the Army, Washington, DC
Filed 17 Feb 83, patented 17 Jan 84 4p
PATENT-4 426 168 Available from Comm. of Patents
A serial impact printer capable of performing multi-color printing at high speed. In this printer an inked ribbon divided into multiple colored bands each along the longitudinal direction thereof is arranged to extend and move in a direction intersecting the print line. A print head assembly is provided with print wire units arranged along the print line, as many in number as the number of the colored bands. Each of the print wire units comprises a plurality of print wires and is disposed in opposition to each of the colored bands respectively. In this arrangement and method multicolored impact serial printing can be performed, just as in conventional monocolor impact printing, without any color change motion of the multicolor inked ribbon or of the print head.

0987 Stereoscopic Video Imagery Generation
G. G. Kuperman, F. R. Bodine
Department of the Air Force, Washington, DC
Filed 23 Mar 82, patented 9 Apr 85 5p
PATENT-4 510 525 Available from Comm. of Patents
Flying spot scanner technology is combined with stereo photography in motion to produce two channels of video imagery which can be optically combined to produce the perception of dynamic stereoscopic detail. The scanner generates alternate lines with lateral offset corresponding to the physical separation between stereo photographic pairs to provide two rasters.

PHYSICS: Lasers

0988 Active Dispersion Control for a Doppler Broadened Laser
R. L. Facklam
Department of the Air Force, Washington, DC
Filed 11 Dec 84 14p
PAT-APPL-6-680 432 Available from NTIS: price code A02
The present invention broadly relates to a laser clock and, more particularly, is concerned with a servo control system that improves the long-term stability of the clock by controlling errors due to optical dispersion effects caused by aging of the laser and change in its temperature. A method for controlling the output of a laser in a laser clock to compensate for changes in the output of the laser due to optical dispersion resulting from laser aging and changes in laser temperature is described, which comprises, comparing the output frequency of the laser clock with a standard of known frequency, such as an atomic clock. Calculating the change in laser discharge current corresponding to any difference between the laser clock frequency and the standard required to adjust the laser clock frequency to a predetermined frequency value, and adjusting the laser discharge current to a value corresponding to the predetermined laser clock frequency.

0989 Analog Frequency Modulated Laser Using Magnetostriction
L. T. Kabacoff
Department of the Navy, Washington, DC
Filed 25 Mar 85 20p
PAT-APPL-6-715 786 Available from NTIS: price code A02
The present invention relates to an analog frequency modulatable laser. The radiation of the lasing medium is analog frequency modulated by change of the optical path length by movement of reflective mirrors forming the resonant cavity at the frequency of radition of the laser in a manner corresponding to an information signal. In one embodiment, a magnetostricitive material is deposited on and bonded to the outer periphery of an active lasing medium having appropriate mirrors on the ends thereof. The magnetostrictive material is exposed to an information encoded magnetic field and physically expands or contracts the physical length of the lasing medium along the optical axis of the lasing medium corresponding to the modulated information of the magnetic field. In another embodiment an optical fiber is secured by cementing or clamping to a transparent end of the active lasing material and one of the optical cavity reflecting mirrors is disposed on the outside end of the optical fiber with the magnetostrictive material being disposed on the optical fiber.

0990 Arrangement for Damping the Resonance in a Laser Diode
J. Katz, A. Yariv, S. Margalit
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 4 Jun 82, patented 23 Apr 85 9p
PATENT-4 513 423 Available from Comm. of Patents
An arrangement for damping the resonance in a laser diode is described. This arrangement includes an additional layer which together with the conventional laser diode form a structure (35) of a bipolar transistor. Therein, the additional layer serves as the collector, the cladding layer next to it as the base, and the active region and the other cladding layer as the emitter. A capacitor is connected across the base and the collector. It is chosen so that at any frequency above a certain selected frequency which is far below the resonance frequency the capacitor impedance is very low, effectively shorting the base to the collector.

0991 Axial Flow Laser Cavity
P. J. Ortwerth, A. I. Lampson
Department of the Air Force, Washington, DC
Filed 3 May 82, patented 13 Nov 84 5p
PATENT-4 483 006 Available from Comm. of Patents
This patent discloses an improved gaseous laser device which comprises a generally tubular laser discharge tube having a laser window at each end thereof, each window disposed at an angle to the lasing axis of the device corresponding substantially to the Brewster's angle characteristic of the material comprising the windows, and including

means directing substantially uniform flow of gaseous laser medium into and out of the discharge tube substantially at said angle and means providing a choked gaseous exhaust exit for canceling cavity disturbances within the device. Laser optics defining an optical resonant cavity of the laser device may be disposed external of the discharge tube and windows.

0992 Controlled-Linewidth Laser Source
J. F. Weller, L. Goldberg
Department of the Navy, Washington, DC
Filed 10 Nov 82, patented 5 Mar 85 9p
PATENT-4 503 541 Available from Comm. of Patents
This patent discloses the control of laser linewidth by reflecting a certain portion of the laser light back into the laser cavity. This control is accomplished by aligning the active layer on an electroabsorptive cell with the active layer of a semiconductor laser on a single substrate with a first waveguide therebetween. Light from the laser is guided by the first waveguide to the electroabsorptive cell whose light absorption is electronically controlled. The laser light propagates through the active region in the electroabsorptive cell and then is guided by a second waveguide to a reflection facet. The laser light is reflected by this reflection facet back through the waveguide-cell-waveguide-laser light path. This can be formed using either a monolithic or a hybrid design.

0993 CO2 Laser Stabilization and Switching
N. E. Buholz
Department of the Air Force, Washington, DC
Filed 14 Jun 83, patented 23 Apr 85 7p
PATENT-4 513 422 Available from Comm. of Patents
A CO2 laser operating in the 10 micrometer region, stabilized by a stabilization circuit that compares the power in a selected pair of R and P lines. A switching circuit connected into the stabilization circuit causes the laser's operating point to be switched within a short interval wherein four different pairs of R/P lines can be output within about 100 ms.

0994 Delta Wing Nozzle Assembly for Chemical Lasers
J. E. Broadwell
Department of the Air Force, Washington, DC
Filed 26 May 82, patented 14 Aug 84 6p
PATENT-4 466 100 Available from Comm. of Patents
This abstract discloses a delta wing nozzle assembly for use within a supersonic chemical laser having a plurality of delta wing-shaped elements which substantially increases the mixing rate of the active reactive gaseous ingredients injected into the resonant cavity of the laser. Each of the plurality of delta wing-shaped elements being of a triangular configuration in which the shape thereof is such that the flow of the gaseous ingredients thereover, normal to the leading edge of the triangular-shaped element, is subsonic. This increased mixing rate substantially increases the output power of the laser.

0995 Device for Cryogenically Fabricating Source Material for Plasma X-ray Lasers
R. C. Elton, R. H. Dixon, J. L. Ford
Department of the Navy, Washington, DC
Filed 3 Jun 83, patented 2 Apr 85 6p
PATENT-4 508 055 Available from Comm. of Patents
This patent describes a device for fabricating a target of a lasing material and a pump material for lasing at X-ray wavelengths wherein one of the materials occurs naturally as a gas. A substrate of the other material is cooled below the freezing point of the one material occuring naturally as a gas. Then a gaseous atmosphere of the latter material is supplied to the cooled substrate so that a frozen layer of the latter material condenses onto the substrate to form the target.

0996 Device for Frequency Modulation of a Laser Output Spectrum
J. R. Beene, C. E. Bemis
Department of Energy, Washington, DC
Filed 17 Jul 84 12p
PAT-APPL-6-631 693 Available from NTIS: price code A02
A device is provided for fast frequency modulating the output spectrum of multimode lasers and single frequency lasers that are not actively stabilized. A piezoelectric transducer attached to a laser cavity mirror is driven in an unconventional manner to excite resonance vibration of the tranducer to rapidly, cyclicly change the laser cavity length. The result is a cyclic sweeping of the output wavelength sufficient to fill the gaps in the laser output frequency spectrum. When a laser is used to excite atoms or molecules, complete absorption line coverage is made possible.

0997 Diffusion Barrier for Long Wavelength Laser Diodes
F. Z. Hawrylo
Department of the Air Force, Washington, DC
Filed 27 Apr 82, patented 23 Oct 84 5p
PATENT-4 479 222 Available from Comm. of Patents
A diffusion barrier is created in a n-type heterojunction layer adjacent to the active region of a semiconductor laser by doping the n-type layer with a periodic table group VI element. The diffusion barrier in the n-type layer prevents the migration of acceptors into that layer. The group VI elements are, in particular, sulfur (S), selineum (Se), and tellurium (Te). The acceptor of concern is zinc (Zn).

0998 Exploding Conducting Film Laser Pumping Apparatus
K. D. Ware, C. R. Jones
Department of Energy, Washington, DC
Filed 27 Apr 84 13p
PAT-APPL-6-604 686 Available from NTIS: price code A02
The 342-nm molecular iodine and the 1.315- mu m atomic iodine lasers have been optically pumped by intense light from exploding-metal-film discharges. Brightness temperatures for the exploding-film discharges were approximately 25,000 K. Although lower output energies were achieved for such discharges when compared to exploding-wire techniques, the larger surface area and smaller inductance inherent in the exploding-film should lead to improved efficiency for optically-pumped gas lasers.

0999 Fiber Optics Interface for a Dye Laser Oscillator and Method
S. A. Johnson, L. G. Seppala
Department of Energy, Washington, DC
Filed 13 Jun 84 20p
PAT-APPL-6-620 305 Available from NTIS: price code A02
A dye laser oscillator in which one light beam is used to pump a continuous stream of dye within a cooperating dye chamber for producing a second, different beam is generally disclosed herein along with a specific arrangement including an optical fiber and a fiber optics interface for directing the pumping beam into the dye chamber. The spe

cific fiber optics interface illustrated includes three cooperating lenses which together image one particular dimension of the pumping beam into the dye chamber from the output end of the optical fiber in order to insure that the dye chamber is properly illuminated by the pumping beam.

1000 Ground Slot Waveguide Laser
P. Chenausky, E. H. Drinkwater, L. M. Laughman
Department of the Army, Washington, DC
Filed 18 Mar 85 12p
PAT-APPL-6-712 943 Available from NTIS: price code A02
A method of fabricating CO2 waveguide type lasers of the type comprising a slot formed in a broad surface of a hard ceramic material, comprising grinding the slot in a conventional surface grinding machine in two steps. The first step utilizes a coarse grinding wheel and the second a finer grinding wheel. The resultant laser cavity can produce high optical power output when provided with RF excitation.

1001 Halogen Mass Flow Rate Detection System
S. J. Davis, L. Hanko
Department of the Air Force, Washington, DC
Filed 19 Sep 83, patented 21 Aug 84 8p
PATENT-4 467 474 Available from Comm. of Patents
This abstract discloses an improvement within an oxygen-iodine chemical laser in the form of a mass flow rate detector for rapidly, accurately, and reliably detecting the mass flow rate of iodine into the resonant cavity of the laser. A mass flow rate detector has an absorption cell to which either an inert gas or an iodine-inert gas mixture is passed. An electromagnetic beam of preselected wavelengths in the bound-continuum absorption region is passed through the absorption cell while either the iodine-inert gas mixture or only the inert gas is therein. By measuring the intensity of the beam passing through the absorption cell molecular absorption can be utilized for determining the concentration of the iodine in the iodine-inert gas mixture. From this value the mass flow rate of the iodine passing through the absorption cell and into the resonant cavity of the laser is determined.

1002 High Energy Laser Mirror
J. D. Wells
Department of the Air Force, Washington, DC
Filed 13 Jan 82, patented 17 Apr 84 4p
PATENT-4 443 059 Available from Comm. of Patents
A high energy laser mirror-heat exchanger is described which comprises a faceplate supporting a mirrored surface, a manifold plate adjacent the faceplate and defining a plurality of passageways for distributing fluid coolant to the adjacent faceplate surface, a heat exchanger adjacent the manifold plate having a plurality of wall members configured in a isogrid configuration which may define a plurality of triangularly shaped passageways therebetween for conducting coolant to the manifold plate the intersections of said wall members defining a plurality of insulated passageways for conducting coolant away from said manifold plate, and a backing plate attached to the heat exchanger including coolant inlet and outlet means.

1003 High Power Laser Dump
M. S. Hsu, J. P. Hsu
Department of the Air Force, Washington, DC
Filed 23 Aug 83, patented 16 Aug 85 5p
PATENT-4 511 216 Available from Comm. of Patents
A hig power laser dump having defined laser beam introduction angles to the internal surface of a cylinder to maximize energy dispersion and absorption and having two zones formed of distinctive reflective and absorbing materials.

1004 High Power Metal Vapor Laser
B. G. Bricks
Department of the Air Force, Washington, DC
Filed 17 Dec 81, patented 10 Apr 84 5p
PATENT-4 442 523 Available from Comm. of Patents
A metal vapor laser, and, in particular, a lead vapor laser having a main discharge tube mounted within a pair of electrode support collars. A discharge electrode is mounted at one end of the laser which is sealed by a conventional window and reflector assembly. One of a pair of recirculating wick structures is situated adjacent the discharge electrode and is supported by an elongated support collar outside of and adjacent an end of the main discharge tube. In addition, this wick structure is isolated from the support collar by a separate auxiliary tube. The auxiliary tube is situated in abutting relationship with the end of the discharge tube. This recirculating wick structure does not protrude into the main discharge tube and is kept separate therefrom. A metal foil thermal shield is isolated from the main discharge tube and electrode collar by insulating standoffs. Such an arrangement allows for a high output lead vapor laser in which discharge tube breakage is essentially nonexistent.

1005 High Temperature Ultra-High Vacuum Infrared Window Seal
T. J. Manuccia, J. R. Peele, C. E. Geosling
Department of the Navy, Washington, DC
Filed 27 Apr 82, patented 15 May 84 6p
PATENT-4 448 000 Available from Comm. of Patents
This abstract discloses a window seal apparatus capable of transmitting infrared radiaton for use under high temperature ultra-high vacuum conditions. The apparatus includes a window clamped between an annular rim of a clamp flange and an annular rim of a sealing flange. The rim of the sealing flange includes an annular sealing knob machined therein having an annular indentation in its upper surface. An annular lead gasket is located between the sealing knob and one side of the window. An annular lead gasket having roughened surfaces is positioned adjacent to the other side of the window and TEFLON gasket is positioned adjacent to the annular rim of the clamp flange. A constant force means is provided for pushing the clamp flange toward the window and the sealing flange thereby producing a seal therebetween. The window is preferably formed from alkali halide material.

1006 Improved Operation of Transversely Exited N2O Lasers
W. T. Whitney, H. Hara
Department of the Navy, Washington, DC
Filed 17 Sep 84 10p
PAT-APPL-6-651 399 Available from NTIS: price code A02
This invention relates to an improved method and apparatus for producing high power, high efficiency pulsed TEA laser energy at N2O wavelengths by suppressing discharge arc formation with H2 or CO that is added to the N2O lasing medium.

Interface Alignment System
See 1048

1007 Jinc-Trap Resonator
T. R. O'Meara
Department of the Air Force, Washington, DC
Filed 12 Apr 83, patented 5 Feb 85 6p
PATENT-4 498 184 Available from Comm. of Patents
A Jinc-trap resonator has a Fourier transform resonator structure with a Jinc-trap spatial filter disposed in one of two opposite end transform planes. A near Jinc-like mode is effectively trapped at the one plane where the filter is located, while a corresponding transform mode that is nearly constant in amplitude and flat in phase is located at the opposite transform plane. The Jinc-trap spatial filter is composed of a first series of concentric absorption bands and a second series of concentric reflecting bands which alternate in position with the absorption bands.

1008 Magnetically Switched Power Supply Systems for Lasers
T. J. Pacala
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 19 Mar 85 26p
PAT-APPL-6-727 931 Available from NTIS: price code A03
A laser power supply system for exciting high power electric discharge gas lasers is described in which separate pulses are utilized to avalanche ionize the gas within the laser and then produce a sustained discharge to cause the gas to emit light energy. A pulsed voltage source is used to charge a storage device such as a distributed capacitance. A transmission line or other suitable electrical conductor connects the storage device to the laser. A saturable inductor switch is coupled in the transmission line for containing the energy within the storage device until the voltage level across the storage device reaches a predetermined level, which level is less than that required to avalanche ionize the gas. An avalanche ionization pulse-generating circuit is coupled to the laser for generating a high voltage pulse of sufficient amplitude to avalanche ionize the laser gas. Once the laser gas is avalanche ionized, the energy within the storage device is discharged through the saturable inductor switch into the laser to provide the sustained discharge.

1009 Maser Cavity Servo-Tuning System
R. L. Sydnor
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 30 Nov 83, patented 14 May 85 8p
PATENT-4 517 530 Available from Comm. of Patents
Two collocated, weakly coupled probes, one loop and one dipole, detect the magnetic and electric fields inside a maser cavity. Signals from the probes are compared in phase, and the signal output from the phase detector is applied to a varactor, the reactance of which is coupled into the cavity by a microwave coupler. Alternatively, the varactor may be placed inside the cavity. Any deviation of phase from 90 deg as detected by the phase detector will then produce an error signal that will change the reactance coupled into the resonant cavity to change its reactance, and thus correct its resonance frequency. An alternative *to* using two probes is to use a single disk probe oriented to detect both the magnetic and electric fields, and thus provide the error signal directly.

Method and Apparatus for Generating a Structured Light Beam Array
See 1056

1010 Method and Apparatus for High Speed, Sustained Recording of Infrared Laser Beam Patterns
J. M. Geary
Department of the Air Force, Washington, DC
Filed 22 Aug 84 13p
PAT-APPL-6-643 138 Available from NTIS: price code A02
A method of photographically recording at high speed the far field pattern of a high energy infrared laser beam over a selected period of time for providing rapid repetitive samples of information on beam parameters such as far field beam intensity., jitter, and absolute beam size and power is disclosed. A sample from high energy infrared laser beam is directed into an enclosure that is light tight to visible radiation and contains an operating lensless movie camera loaded with suitable movie film. The infrared beam is focused on the film plane of the camera so that consecutive frames of the film are irradiated by the infrared beam each time the camera shutter is open. The period of irradiation is of sufficient duration to sensitize the film to visible radiation in the areas where the infrared radiation impinges on the film. The position of the camera shutter is detected and an electrical trigger signal generated just before the shutter is closed for each frame. The trigger signal is applied to appropriate circuitry which actuates a light source to generate a pulse of visible light that irradiates the film plane of the camera near the end of each shutter movement to expose each frame of the film. The exposed film strip is developed to provide a continuous record of the infrared laser beam characteristics over the selected period of time.

1011 Multiple Double Heterojunction Buried Laser Device
F. Z. Hawrylo
Department of the Air Force, Washington, DC
Filed 2 Jun 82, patented 20 Nov 84 7p
PATENT-4 484 332 Available from Comm. of Patents
A multiple double heterojunction buried laser device is formed of a bulk structure, a plurality of double heterojunction buried lasers and electrical means. The bulk structure includes, in order, an InP:Sn substrate, an InP:Te first layer, an InP:Zn second layer, an InP:Te third layer, and a capping n-type fourth layer. Multiple stripe-like openings are formed in the above layers and double heterojunction buried lasers are formed therein. The double heterojunction buried lasers include the following layers in order: an InP:Te heterojunction first layer, an InGaAsP quarternary second layer, an InP:Zn heterojunction third layer, and an InGaAsP:Zn capping fourth layer. A reverse biased junction is formed in said bulk structure so that current is confined to the lasers; the active lasing regions are above the p-type layers of the p-n reversed bias junction. The double heterojunction buried lasers can be cleaved from the laser device and operated as a single device.

1012 Multiple Parallel RF Excited CO2 Lasers
P. P. Chenauski, L. N. Laughman, E. H. Drinkwater
Department of the Army, Washington, DC
Filed 1 Aug 85 18p
PAT-APPL-6-761 256 Available from NTIS: price code A02
Dual waveguide lasers which are transversely excited in parallel from a common source of radio frequency are provided with one or more channels or bores connecting the laser cavities. The dimensions and configuration of the connecting channels are chosen so that the electric field from the applied RF excitation source will be higher in the con-

necting channels than in either of the paralleled waveguide gas discharge cavities, or that the electron collision loss to the nearby ceramic and metallic walls will be lower in the connecting channels than in the aforementioned waveguide cavities. The initial gas breakdown is thus made to preferentially occur in the connecting channels and thus force initiation of both laser cavities simultaneously.

1013 New Free Electron Laser Using a Relativistic Beam with Spiralling Electron

T. C. Marshall, S. P. Schlesinger, A. A. Crossman, S. C. Chen

Department of the Navy, Washington, DC

Filed 31 Jan 84 16p

PAT-APPL-6-575 425 Available from NTIS: price code A02

A free electron laser (FEL) is described which is used for generating high power radiation in a region of increasing guiding magnetic field before injection into an undulating low magnetic field. It includes an electron beam propagating along a guiding magnetic field BO (approximately 10 kilo gauss) inside a hollow metallic tube used as a wave guide. Around the path of the beam, an undulator in the form of a bifilar helical winding or the like produces a periodic magnetic field B(1) (approximately 0.5 to 1.0 kG). The electron motion accordingly has a substantial transverse component and the motion at the cyclotron and undulator frequencies occurs. Due to the energy exchange between the gyrating component of electron motion and an electromagnetic wave already present in the hollow tube, radiation of a calculable frequency is amplified.

1014 Optically Pumped Iodine Monofluoride Laser

S. J. Davis, L. Hanko

Department of the Air Force, Washington, DC

Filed 23 Nov 81, patented 11 Dec 84 7p

PATENT-4 488 311 Available from Comm. of Patents

In accordance with the present invention, there is provided a short wavelength chemical laser device which utilizes iodine monofluoride as a lasing medium. The device is an optically pumped iodine monofluoride laser in which the ground state iodine monofluoride is produced by reacting iodine and fluorine to form a flame within which the monofluoride is produced. The monofluoride is then pumped or excited with a high energy, broadband dye laser. The device of this invention has particular utility as a gain probe for chemically generated IF lasers and as a useful prototype to study lasing in reactive flows. It can be used to obtain output spectra and powers, as well as study reactant densities and the effects of mixing on visible lasing. Such data is invaluable in designing and constructing visible lasers. The primary object of this invention is to provide a simple, efficient and dependable short wavelength gas laser. Another object of this invention is to provide an optically pumped gas laser in which the lasing medium is chemically produced in the optical resonator of the laser immediately before lasing commences. Still another object of this invention is to provide a gas laser in which visible lasing occurs within the flame resulting from the chemical reaction utilized to produce the lasing medium.

1015 Optically Pumped Laser System Having Extracavity Pulse Smoother

F. P. Trebino

Department of the Air Force, Washington, DC

Filed 11 Apr 85 14p

PAT-APPL-6-721 833 Available from NTIS: price code A02

A laser system includes a pulse smoother device positioned outside the laser cavity and in the path of the laser pump beam. A highly reflecting mirror and a partially reflecting mirror receive the pumping beam which has the temporal intensity fluctuations. Upon impinging on the partially reflecting mirror, some of the beam passes through to a lens. Other parts of the beam are reflected back onto the highly reflecting mirror which in turn, reflects the light back onto the partially reflecting mirror. This process is repeated throughout the lengths of the mirrors and the light exiting the beam smoothing device is combined. That is, the delayed and undelayed beams are added in the lens and focused upon the laser gain medium, providing a composite beam of light with reduced fluctations. This process has the effect that the pumped laser output beam has a smoother output.

1016 Passive Maser Using Timesharing for Control of the Cavity and Control of the Oscillator on the Line of Stimulated Emission

A. H. Frank, J. D. White

Department of the Navy, Washington, DC

Filed 19 May 81, patented 15 May 84 12p

PATENT-4 449 105 Available from Comm. of Patents

A passive maser wherein control of the cavity and control of the oscillator on the line of stimulated emission operate in a shared-time mode. A control circuit acts on the injected signal by way of a programmable synthesizer, the injected signal then assuming the successive values omega L/, omega H, omega H and omega c/, omega H and omega c-, omega L-, omega L/, etc. in stages. Omega H is centered on the line of stimulated emission omega L/ and omega L- which are symmetrically shifted interrogate the sides of the emission line; and omega C/ and omega C- which are further symmetrically shifted interrogate the sides of the cavity resonance. The control circuit periodically inhibits the detection action used for controlling the oscillator, and the detection action used for controlling the cavity is carried out only during the inhibition period.

1017 Phased Locked Array Laser Systems

J. F. Lam

Department of the Navy, Washington, DC

Filed 21 May 84 13p

PAT-APPL-6-612 528 Available from NTIS: price code A02

A phase locked array laser system encloses a set of laser oscillators by a sawtooth mirror or corner cube reflector on one side and a partially reflecting sawtooth mirror on the other side. The system is fully enclosed by having two mirrors or corner cube reflectors at the top and bottom ends of the partially reflecting sawtooth mirror to coherently couple each laser oscillator to the others.

1018 Pulse Transformer Package for Impedance Matching a Laser Diode to a Transmission Line

G. M. Bender

Department of the Air Force, Washington, DC

Filed 23 Dec 82, patented 27 Nov 84 4p

PATENT-4 485 361 Available from Comm. of Patents

This patent covers a package for matching the characteristics impedance of a transmission line to the impedance of a pulsed semiconductor laser diode so that short duration pulse of light can be produced with a fast repetition rate. The packages has a toroidal transformer in a cavity of a mainbody, with a multiturn primary connected to a transmission line. The laser diode is mounted at the edge of a known sandwich between two thin metal plates separated

by an insulating layer. A space and metal cover cap are placed over the sandwich, and a screw passing through holes of all the parts is threaded into the main body. The screw passing through the transformer core forms a one-turn secondary. Not only does this allow the matching of the characteristic impedance, but also provides heat sinking for the diode. Assembly with a screw makes the unit easy to fabricate, and to replace the laser diode sandwich.

1019 Pulsed Digital Multiplexed Laser Generator
T. E. Honeycutt, T. G. Roberts
Department of the Army, Washington, DC
Filed 25 Jun 85 22p
PAT-APPL-6-758 919 Available from NTIS: price code A02
A system of lasers which produces a single pulsed laser beam carrying many channels of digital information simultaneously. The information content of each laser output pulse is determined by the presence or absence of one or more input signal channel frequencies. The presence or absence of each frequency is provided by a plurality of low power CW lasers operating at different frequencies and which are selectively gated in a binary fashion by pulse coded digital input signals to provide digitized low power laser outputs in accordance with the digital input signals. The low level pulses of the various optical frequencies are combined and utilized to preload a relatively high power pulsed CO2 output laser. A pair of mirror assemblies are utilized to respectively combine the multifrequency channel pulses and transmit a single pulsed output laser beam generated by the pulsed output laser. The presence or absence of each frequency component in each output pulse is determined by the frequency components preloading the cavity modes of the pulsed high power output laser.

1020 RF Laser Array Driver Apparatus
C. R. Chubb, V. H. Nettle
Department of the Air Force, Washington, DC
Filed 3 Aug 81, patented 18 Sep 84 4p
PATENT-4 472 807 Available from Comm. of Patents
An RF laser array driver apparatus with a DC bias input and and RF input to modulate a diode array and provide a modulated optical output. The driver circuit comprises a series impedance which is in parallel with the diode array to provide a 50 ohm impedance to the RF input signal that is substantially constant with frequency.

1021 Simple Power Meter for High Energy Pulsed Lasers
C. H. Pyles, W. F. Otto
Department of the Army, Washington, DC
Filed 1 Mar 85 14p
PAT-APPL-6-707 294 Available from NTIS: price code A02
A temperature resistance wire is wound about a frame and exposed to the laser beam which causes the temperature of the wire to increase. The resistance change of the wire is measured so as to give an indication of the energy of the laser. The wire is wound with a plurality of turns in one direction so as to make the device non-dependent upon the polarization orientation of the laser.

1022 Simultaneous Doped Layers for Semiconductor Devices
F. Z. Hawrylo
Department of the Air Force, Washington, DC
Filed 12 Mar 82, patented 11 Jun 85 4p
PATENT-4 523 212 Available from Comm. of Patents
An indium phosphide semiconductor layer or layers are s multaneously doped with groups II-VI elements such as zi and selenium. These simultaneously (acceptor/-dono doped layers offer improved characteristics when used a an ohmic contact capping layer of indium phosphide or a the active laser region in long wavelength light emittin diodes composed of indium phosphide. The simultaneou doping is achieved through the use of liquid phase epitax

1023 Three-Point Spherical Mirror Mount
R. W. Cutburth
Department of Energy, Washington, DC
Filed 23 Jan 84 13p
PAT-APPL-6-573 251 Available from NTIS: price code A02
A three-point spherical mirror mount for use with lasers disclosed. The improved mirror mount is adapted to provid a pivot ring having an outer surface with at least thre spaced apart mating points to engage an inner spheric surface of a support housing.

1024 Transmissive Dewar Cooling Chamber for Optically Pumped Semiconductor Ring Lasers
M. M. Salour, A. Fuchs
Department of the Air Force, Washington, DC
Filed 16 Nov 83, patented 29 Jan 85 8p
PATENT-4 495 782 Available from Comm. of Patents
A transmission Dewar cooling chamber having a housin for supporting a semiconductor crystal therein within a ter perature controlled environment. The housing has wal made partially of material transmissive to a preselecte wavelength in order to allow the passing of a beam of ele tromagnetic radiation completely through the housing. addition, mounting means are provided to move the hou ing in at least two dimensions. Securing the semiconduct crystal in place within the housing is a uniquely designe frame/-mount arrangement which aids in establishing th temperature controlled environment for the crystal whi also allowing the beam of electromagnetic radiation to pa completely through the crystal.

1025 Vacuum Ultraviolet Laser
J. Berkowitz, B. M. Ruscic, J. P. Greene
Department of Energy, Washington, DC
Filed 6 Jul 84 15p
PAT-APPL-6-628 700 Available from NTIS: price code A02
Transitions from the 2p sup 4 (sup 1 S sub 0)3s sup 2 S sub 1/2/ state of atomic fluorine to all allowed laser stat produces laser emission at six new wavelengths: 680.7 682.6A, 3592.7A, 3574.1A, 6089.2A, and 6046.8A. Cohe ent radiation at these new wavelengths can be generate in an atomic fluorine laser operated as an amplifier or as a oscillator.

1026 Visible and Ultraviolet Lasers Based on Excime Transitions in the Homonuclear Halogens
J. G. Eden, K. P. Killeen
Department of the Navy, Washington, DC
Filed 28 Sep 84 8p
PAT-APPL-6-356 814 Available from NTIS: price code A02
Visible and ultraviolet lasers are based on excimer tran tions in the diatomic homonuclear halogen molecules. Ele tron beam pumping of argon and hydrogen iodide gas m tures produces a strong green emission in I2 centered 505 nm and a full width of half maximum (FWHM) of t gain spectrum of approximately 15 nm. The transition

the green I2 band is bound-to-free, so a laser on this transition is continuously tunable. The result is a room temperature excimer laser that is potentially tunable over a region of 150A in the blue-green.

1027 W-Shaped Diffused Stripe GaAs/AlGaAs (Gallium Arsenide/Aluminium Gallium Arsenide) Laser
Y. Z. Liu, C. S. Hong, D. Dapkus
Department of the Navy, Washington, DC
Filed 7 Sep 82, patented 4 Jun 85 7p
PATENT-4 521 887 Available from Comm. of Patents
This patent describes a w-shaped diffused stripe GaAs/AlGaAs (Gallium Arsenide/Aluminium Gallium Arsenide) laser and a method for making the same. A double heterostructure layered structure includes a p-type GaAs active layer in contact with a p-type AlGaAs current blocking layer. These layers are sandwiched between two N-type AlGaAs confinement layers. A p-type zinc diffused stripe region having a w-shaped diffusion front extends longtudinally between two reflective surfaces located on respective ends of the device and extends vertically from the surface of the upper confinement layer and through a portion of the lower confinement layer and through portions of the various intervening layers. In a method of forming the device, the various layers are formed by epitaxial growth or by metalorganic chemical vapor deposition. The stripe region is formed by diffusing zinc into the device from a source through a pair of parallel slots in a diffusion mask. The zinc diffused into the device is further driven-in by heating the device on the absence of the zinc source.

PHYSICS: Optics

1028 Acoustically Tuned Optical Filter System
V. Azgapetian, A. M. Azgapetian
Department of the Air Force, Washington, DC
Filed 5 Nov 82, patented 30 Apr 85 4p
PATENT-4 514 056 Available from Comm. of Patents

1029 Advanced Cube Processor
R. P. Booker
Department of the Navy, Washington, DC
Filed 29 Jun 84 14p
PAT-APPL-6-626 506 Available from NTIS: price code A02
An apparatus and method provide for the electrooptic performing of matrix-matrix multiplication, computation of the cross-ambiguity function and calculation of triple correlations. A collimated light sources is pulsed to illuminate a first matrix of optically encoded information. Since the first matrix functions in the transmissive mode the same pulsed light is deflected by a polarizing beam splitter to a second matrix of optically encoded information. This matrix, functioning in the reflective mode reflects the pulsed, collimated light back through the beam splitter onto a third matrix of optically encoded information. The third matrix is operated in the reflective mode and reflects the pulsed, collimated light back to the polarizing beam splitter and onto a two-dimensional photodetector array. The photodetector array adds the successively arithmetically processed encoded informations from the first, second and third matrices of information. The information of the first matrix is advanced across the light path from the pulsed, collimated light source and the encoded information from the second and third matrices are advanced across opposite faces of the polarizing beam splitter in a mutually orthogonally displacement with respect to one another. Optionally, the information in the first matrix can be advanced across the path of the pulsed collimated light at right angles to that described above the effect substantially the same mathematical operations called for above.

Analog Frequency Modulated Laser Using Magnetostriction
See 0989

Atmospheric Transmissometer
See 0502

1030 Bandpass Filter Formed by Serial Gratings Operating in a Wood's Anomaly Region
P. R. Peterson, A. Gavrielides
Department of the Navy, Washington, DC
Filed 30 Sep 82, patented 5 Mar 85 6p
PATENT-4 502 756 Available from Comm. of Patents
A bandpass filter is comprised by a plurality of reflection gratings operating in a Wood's anomaly region and arranged in serial relationship. Specifically, the gratings are serially arranged in two substantially parallel rows with the gratings in the first row offset laterally from the gratings in the second row. Further, the input to each grating is at substantially the same angle of incidence such that the output of one grating is the direct input to the next succeeding one of the gratings.

1031 Bragg Cell Spectrum Analyizer Specification
W. K. Burns
Department of the Navy, Washington, DC
Filed 5 Jun 84 14p
PAT-APPL-6-617 659 Available from NTIS: price code A02
A Bragg cell RF spectrum analyzer of the type having a laser input wherein the laser input is coupled to the Bragg cell analyzer by a single-mode optical fiber for the purpose of improving the spatial quality of the laser, thus limiting side lobes of the input laser beam; and allowing the laser input to be remote from the Bragg cell.

1032 Charge Isolation in a Spatial Light Modulator
D. Armitage
Department of the Air Force, Washington, DC
Filed 8 Jan 85 12p
PAT-APPL-6-689 699 Available from NTIS: price code A02
Basically, spatial light modulators generally comprise a photosensitive substrate or wafer, a light blocking layer, a dielectric mirror and an electro-optic crystal (which may be a liquid crystal), arranged in a sandwich-like composite structure, and having a voltage applied thereacross. A control (write) illumination impinges on the face of the photosensitive semiconductor while an output (read) illumination makes a double pass through the electro-optic crystal. One of the problems encountered in the practical implementation of such spatial light modulators is that of lateral charge transfer in the semiconductor device. By this is meant that the charge formed in the photosensitive semiconductor nearest the electro-optic crystal, resulting in poor spatial resolution. A spatial light modulator having a lattice of microgrooves formed on the surface of the silicon photodiode nearest the electro-optic crystal prevents lateral charge transfer at this surface.

1033 Device for Controlling Optical Fiber Twist on a Bobbin
J. S. Hunter, P. B. Ruffin
Department of the Army, Washington, DC
Filed 24 Dec 84 21p
PAT-APPL-6-686 048 Available from NTIS: price code A02
This patent application describes a device for controlling the twist associ ated with optical fiber being wound on a bobbin. Signal transmission analysis in fibers wound on bobbins require techniques not normally encountered when considering long straight fibers. Signal loss on a fiber cable payout assembly is mainly due to small bends in the fiber at crossover positions and in the transmition regions where the winding travel changes directions. The signal attenuation in a length of optical fiber is also known to be a function of the amount of twist in the fiber both in the wound and payed out states. This invention allows the amount of twist of the optical fiber to be precisely controlled from zero to full (360 degrees twist per turn of the bobbin) twist to provide optimum signal transmission for both the wound and payed out states.

1034 Differentiating Spatial Light Modulator
D. Armitage
Department of the Air Force, Washington, DC
Filed 11 Apr 85 16p
PAT-APPL-6-721 977 Available from NTIS: price code A02
A differentiating spatial light modulator device in which a photoreceptor and an electro-optic crystal are isolated by a dielectric mirror. The electro-optic crystal is configured to have low or zero longitudinal response, yet is sensitive to transverse electric fields. The fringe field generated by the photoreceptor (photodiode) modulates the crystal birefringence. Readout via a polarizing beamsplitter gives an output light related to the spatial gradient of the input light. In a liquid crystal embodiment of the invention, reversal of the applied voltage gives a driven off state which speeds the erasure. Storage is possible in the smectic liquid crystal phase.

1035 Diffraction Diffusion Screen with Holographically-Suppressed Zero-Order Beam
M. J. Chern
Department of the Air Force, Washington, DC
Filed 1 Nov 84 14p
PAT-APPL-6-667 194 Available from NTIS: price code A02
A diffusing screen (50, 50 ft, 50 in, 102) of a transmission hologram (54, 80, 94, 112) located adjacent to a diffraction optics directional diffusing screen (52, 86, 92, 114) suppresses zero-order light from the diffusing screen thereby providing a device having the advantages of a directional diffusing screen but which does not have the disadvantages associated with zero-order light.

1036 Double Pinhole Spatial Phase Correlator Apparatus
P. R. Peterson
Department of the Air Force, Washington, DC
Filed 7 Dec 84 12p
PAT-APPL-6-679 333 Available from NTIS: price code A02
A random wavefront is incident on an aperture plate with a double pinhole of variable separation that is followed by Fourier transforming optics which focusess an intensity profile on a detector array. The detector array is located in the Fourier transform plane of the Fourier transform lens. The time average of the intensity as a function of hole separation yields the root mean square phase and the phase correlation function of the applied wavefront.

1037 Dual-Secondary Mirror Cassegrain Optical System
O. D. Christy
Department of the Army, Washington, DC
Filed 11 Jan 82, patented 27 Mar 84 6p
PATENT-4 439 012 Available from Comm. of Patents
The dual-secondary mirror optical system utilizes, in principle, the Cassegrain optical system. An apertured, single, primary mirror is coaxially aligned with two secondary mirrors to provide coaxial transmit and receive optical paths. Separation of the optical paths is in radial distance from the central optical axis. An apertured secondary mirror in conjunction with the primary mirror detects the transmitted beam, providing a hollow expanded output beam. The other secondary mirror in conjunction with the primary mirror directs received radiation coaxially within and spatially separated from the hollow transmitted beam, providing dual transmit receive operation.

1038 Electro-Optic Harmonic Conversion to Switch a Laser Beam Out of a Cavity
R. A. Haas, M. A. Henesian
Department of Energy, Washington, DC
Filed 19 Oct 84 28p
PAT-APPL-6-662 642 Available from NTIS: price code A03
The present invention relates to switching laser beams out of laser cavities, and more particularly, it relates to the use of generating harmonics of the laser beam to accomplish the switching. When laser light is generated in a laser cavity the problem arises of how to switch the laser light out of the cavity in order to make use of the resulting laser beam in a well known multitude of ways. These uses include range finding, communication, remote sensing, medical surgery, laser fusion applications and many more. The switch-out problem becomes more difficult as the size of the laser aperture grows such as in laser fusion applications. The final amplifier stages of the Nova and Novette lasers at Lawrence Livermore National Laboratory are 46 centimeters with the laser beam expanded to 74 centimeters thereafter. Larger aperture lasers are planned.

1039 Electron-Bombarded Silicon Spatial Light Modulator
D. Armitage
Department of the Air Force, Washington, DC
Filed 8 Jan 85 10p
PAT-APPL-6-689 681 Available from NTIS: price code A02
In electron-bombarded silicon light modulator, leaving a microchannel plate amplifier are accelerated to penetrate a silicon photodiode forming electron-hole pairs therein, resulting in significant current gains.

1040 Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
R. P. Bocker, S. R. Clayton, K. Bromley
Department of the Navy, Washington, DC
Filed 21 May 84 20p
PAT-APPL-6-612 288 Available from NTIS: price code A02
This invention is directed to providing an apparatus and method for improving accuracy in an electooptical matrix-matrix multiplier by using twos complement arithmetic. A

source of pulsed collimated light illuminates a first matrix of optical encoded information of numbers in the twos complement binary representation and a second matrix of optical encoded information of numbers in the twos complement binary representation that mutually orthogonally are displaced with respect to one another in synchronization with the pulsing of the collimated light source. A photodetector array is located to add multiplied encoded information of numbers in the twos complement binary representation of the first matrix providing means and the second matrix providing means to be expressed as mixed binary representation signals. A suitable decoder is coupled to the photodetector array for decoding the mixed binary representation signals into twos complement binary representations or digital representations for use by interconnected processing devices. Staggering the encoded twos complement binary representations of one matrix of information and orthogonally advancing it with respect to the other matrix of information allows the addition of multiplied mixed binary representations by the photodetector array to provide accurate representations of decimal mathematical numbers.

iber Optic Sensors Operating at DC
ee 0541

041 Fine Figuring Actuator
J. W. Pepi
Department of the Air Force, Washington, DC
Filed 17 Oct 84 13p
PAT-APPL-6-661 833 Available from NTIS: price code A02
A novel mirror structure and actuator for precision control of the contour of a mirrored surface is described which comprises a movable control member for contacting the mirror faceplate, and a position controller, which may be in the form of an electrically controlled magnet and coil assembly, operatively interconnecting the control member and a rigid support for the mirror structure; a position sensor operatively interconnects the control member and the mirror support to sense the position of the control member and to provide a corresponding output signal; programmable information processing electronics, responsive to the output signal of the position sensor, provides an input signal to the position controller to move the control member against the faceplate whereby the shape of the faceplate may be controlled according to a preprogrammed scheme applied to the electronics.

1042 Focal Plane Array Optical Proximity Sensor
A. R. Johnston
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 11 Mar 81, patented 23 Oct 84 11p
PATENT-4 479 053 Available from Comm. of Patents
An optical proximity sensor for optically detecting an object within a predetermined detection volume is described. More specifically, an optical proximity sensor is disclosed having an illuminator assembly including lens and a plurality of light-emitting diodes located at first predetermined positions along the focal plane of the illuminator lens. A detector assembly including a detector lens and a plurality of photodiodes located at second predetermined positions along the focal plane of the detector lens is also provided. The two lenses are spaced apart a predetermined distance in order to define a predetermined detection volume. Additionally, a combination of optical proximity sensors, according to the invention, is disclosed wherein the sensors can be used in conjunction with a vehicle to provide a safety system for warning an operator when an object is within a volume defined by the proximity sensor combination.

1043 Helmet Mounted Telescope
H. L. Task, C. Bates
Department of the Air Force, Washington, DC
Filed 15 Nov 82, patented 14 Aug 84 4p
PATENT-4 465 347 Available from Comm. of Patents
An improved helmet is provided including means to telescopically acquire an image of a field of view, which comprises, a telescopic optical system including an objective lens mounted to said helmet above the line of sight of the wearer, a light-conducting fiber optics bundle mounted to said helmet for receiving the image from the objective lens, and collimating lens for receiving the image from the fiber optics bundle and projecting the image onto a helmet-mounted visor in the line of sight of the wearer. A shutter, remotely controllable by the wearer, may be disposed intermediate the objective lens and display to selectively block transmission of the image.

1044 High Accuracy Digital Acousto-Optic Matrix Computer
R. A. Athale
Department of the Navy, Washington, DC
Filed 22 Feb 85 22p
PAT-APPL-6-704 454 Available from NTIS: price code A02
This document describes a digital acousto-optic device for performing vector-matrix multiplication. The device comprises two multitransducer acousto-optic bragg cells images onto each other. The first cell receives the elements of the input vector in parallel. The second cell receives the elements of sequential row vectors of the matrix in parallel. The data in the two cells act to modulate a light beam is detected to produce an output data stream containing the elements of the output vector. The invention uses binary coded data for high accuracy (16-bits).

High Power Laser Dump
See 1003

1045 High Resolution Diffraction Grating
L. Sica
Department of the Navy, Washington, DC
Filed 27 Jul 82, patented 9 Oct 84 5p
PATENT-4 475 792 Available from Comm. of Patents
An optical prism, with an input surface, a reflecting surface and a base, and with a diffraction grating formed on the reflecting surface. The prism is designed so that if an input beam is incident normal to the input surface, then efficiency of the order diffracted in the direction opposite the input beam is greater than a predetermined value. If the prism is fabricated of a material with index of refraction n, then the resolving power of the grating is increased by n.

High Temperature Ultra-High Vacuum Infrared Window Seal
See 1005

1046 Holographic Directional Coupler for Fiber Optic Systems
J. L. Horner, J. E. Ludman
Department of the Air Force, Washington, DC
Filed 6 May 82, patented 14 Aug 84 10p
PATENT-4 465 332 Available from Comm. of Patents
A fiber optic directional coupler having a holographic element incorported therein. A single optical signal impinges on the holographic element and is separated into a plurality

of individual signals which are coupled to a plurality of individual optical fibers. Only a fraction of the incident electromagnetic radiation incident on the holographic element is transmitted to any one of the plurality fibers. Reversing the direction of the radiation causes all the energy emanating from the combined plurality of fibers to be coupled to the single receiving fiber.

1047 Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
R. L. Abrams, D. M. Henderson, D. A. Pinnow, R. R. Stephens
Department of the Air Force, Washington, DC
Filed 20 Oct 82, patented 22 Jan 85 5p
PATENT-4 494 827 Available from Comm. of Patents
An imaging apparatus permits the use of a transverse electrode electro-optic tunable filter (TEOTF), despite its obscured aperture, to produce a high quality image. The imaging apparatus includes a suitable conventional anamorphic input optical system in combination with a stacked plurality of TEOTFs in which the platelet of each TEOTF is made of an electro-optic material of a known index of refraction (such as CdS of an index of approx. 2.4), and is clad between its surface and its electrodes with a material having a lower index of refraction than the platelet material (such as SiO2 of an index of approx. 1.5).

1048 Interface Alignment System
P. J. Pomphrey
Department of the Air Force, Washington, DC
Filed 29 Mar 83, patented 23 Jul 85 5p
PATENT-4 530 602 Available from Comm. of Patents
A novel optical alignment system and method is provided for detecting misalignment of the optical components of a high energy laser comprising a source of radiation, such as a HeNe laser, for providing an alignment beam to intersect the optical path of the high energy system, optical beam splitting means at the intersection of the alignment beam and optical path to direct a first portion of the alignment beam toward the target and a second portion to the high energy cavity, the second portion interacting with the high energy cavity to provide a return beam along the alignment beam axis, and means to display and view the return beam relative to the alignment beam axis. (Patents)

Jinc-Trap Resonator
See 1007

1049 Laser Generation of Ultrasonic Waveform Reconstructions
W. R. Scott, C. S. Ih
Department of the Navy, Washington, DC
Filed 19 Jan 83 13p
PAT-APPL-6-459 073 Available from NTIS: price code A02
A series of pulses are transmitted to a first laser and the same series of pulses through a time delay network to a second laser. Each laser provides pulses of light through separate diagonal mirrors and through respective transparent holograms. Each light beam is then brought into convergence by respective sides of a wedge shaped reflector and brought into spacially coincident focus by an imaging lens onto the surface of a sample under test. The two hologram transparencies are imaged spacially coincident but separated in time on the face of the sample. Thermal elastic waves produced by a laser heating at the sample surface transform into a desired acoustic beam pattern determined by the nature of the wavefronts which the hologram transparency represents. The position of the coincident image on the sample may be moved by varying the time between the two pulses.

Laser Generation of Ultrasonic Waveform Reconstructions
See 0567

1050 Laser Target Speckle Eliminator
C. N. Scully
Department of the Air Force, Washington, DC
Filed 23 Dec 82, patented 16 Apr 85 5p
PATENT-4 511 220 Available from Comm. of Patents
An apparatus for eliminating the phenomenon of speckle with regard to laser light reflected from a distant target whose roughness exceeds the wavelength of the laser light. The apparatus includes a half plate wave member, a first polarizing beam splitter member, a totally reflecting right angle prism, and a second polarizing beam splitter member, all of which are in serial optical alignment, that are used in combination to convert a linearly (i.e., vertically) polarized light beam, which is emitted by a laser having a known coherence length, into two coincident, orthogonally polarized, beams that are not coherent with each other, and that have and optical path difference which exceeds the known coherence length of the emitting laser, to eliminate the speckle.

1051 Light Transmitting Window Assembly
D. L. Connelly
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 16 Aug 83, patented 4 Jun 85 5p
PATENT-4 521 077 Available from Comm. of Patents
This invention provides a light transmitting assembly that can, at will, be changed from a state of transparency to one of translucency. It comprises two parallel spaced apart panes of transparent material, such as glass, with a film of polytetrafluoroethane, which is inherently translucent or opaque, disposed between. The assembly is rendered transparent by introducing a fluid into the assembly to substantially cover a surface of the film; the liquid having a refractive index corresponding to the refractive index of the film. The translucency is restored by removing the fluid.

1052 Liquid Crystal Light Valve Structures
N. J. Koda
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center
Filed 9 Jan 84, patented 11 Jun 85 4p
PATENT-4 522 469 Available from Comm. of Patents
An improved photosensor film and liquid crystal light valves embodying said film is provided. The photosensor film and liquid crystal light valve is characterized by a significant lower image retention time while maintaining acceptable photosensitivity. The photosensor film is produced by sputter depositing CdS onto an ITO substrate in an atmosphere of argon/H2S gas while maintaining the substrate at a temperature in the range of about 130 C to about 200 C and while introducing nitrogen gas into the system to the extent of not more than about 1% of plasma mixture. Following sputter deposition of the CdS, the film is annealed in an inert gas at temperatures ranging from about 300 C to about 425 C.

1053 Low Loss Splicing Method for Single-Mode Optical Fiber
G. F. Lutes
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 7 Aug 84 8p
PAT-APPL-6-638 585 Available from NTIS: price code A02
An inexpensive method for accurately aligning and joining together two single-mode optical fibers is provided. A capillary tube is employed into which the fibers are inserted. One fiber is mounted in a micropositioner and its end is inserted into the tube a relatively short distance. The short insertion depth enables accurate alignment of the fibers, which are secured into place by an ultraviolet-cured epoxy.

1054 Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
R. P. Bocker, H. J. Caulfield, K. Bromley
Department of the Navy, Washington, DC
Filed 17 Feb 84 21p
PAT-APPL-6-581 168 Available from NTIS: price code A02
An electrooptic systolic array architecture performs matrix-matrix multiplication using incoherent light. The incoherent light is collimated and passed through a polarizing beamsplitter and onto a pair of optically reflecting light valves. Each of the valves has a number of cells which are continuously being updated in a clocked sequence to vary their reflectivity in accordance with the data sequence. As the collimated incoherent light source is pulsed the reflectivity of the cells of the two light valves is reflected back through the polarizing beamsplitter and onto a photodetector array. The photodetector array senses the multiplied signals from the two valves and provides a representative output in the same time frame as the pulsed collimated light source. Another polarizing beamsplitter can be disposed to receive the multiplied signals from the first two valves and combined or multiplied with the input from yet another light valve which is, in turn, received by an additional photodetector array. This sequence can be repeated depending on the number of stages desired. A feedback capability is also provided for when iterative processing is desired.

1055 Method and Apparatus for Generating a Structured Light Beam Array
J. Toboada
Department of the Air Force, Washington, DC
Filed 4 Aug 83 18p
PAT-APPL-6-520 356 Available from NTIS: price code A02
An apparatus for simultaneously generating a space volume-filling structural light beam array utilizes a prism assembly which refracts a laser light beam so as to partition it into four separate segments. The four segments produced the two-by-two rectangular beam array by coherent interference of the segments. The present invention broadly relates to analysis of surface topography of an object and, more particularly, is concerned with apparatus and method for generating a space volume-filling structured light beam array for use in non-contact surface metrology of various solid forms.

1056 Method and Apparatus for Generating a Structured Light Beam Array
J. Taboada, B. R. Altschuler
Department of the Air Force, Washington, DC
Filed 4 Aug 83, patented 18 Jun 85 9p
PATENT-4 523 809 Available from Comm. of Patents
Apparatus for simultaneously generating a space volume-filling structural light beam array utilizes a prism assembly which refracts a laser light beam so as to partition it into four separate segments. The four segments produced the two-by-two rectangular beam array by coherent interference of the segments.

Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
See 0585

1057 Method of Measuring Spherical Aberration and Apparatus Therefor
J. M. Geary
Department of the Air Force, Washington, DC
Filed 11 Apr 85 21p
PAT-APPL-6-721 968 Available from NTIS: price code A02
The present invention relates to measurement of spherical aberration, and more particularly, to a method of employing a non-interferometric technique, making use of axial intensity information, in which the intensity of the light pattern along the optical axis is calibrated to achieved improved measurement of spherical aberration, and an apparatus for practice of same. Spherical aberration is measurable via a number of experimental procedures. Qualitative and semi-qualitative estimates can be obtained by the visual inspection of the star image, or form a Foucault knife edge test. Quantitative methods include the Hartmann test, and a host of interferometric approaches, such as point diffraction, and lateral shear interferometry. However, such methods are known to be inaccurate, difficult to apply, and time-consuming is various applications. It is therefore an object of the present invention to provide a novel method for accurate direct measurement of spherical aberration in test pieges. It is another object of the present invention to provide a novel apparatus for practice of the invention.

1058 Method of Producing a Buried Long Period Grating
R. H. Pohle, R. C. Ohlmann
Department of the Air Force, Washington, DC
Filed 29 Jul 83, patented 9 Oct 84 6p
PATENT-4 476 161 Available from Comm. of Patents
A method of producing a buried long period grating which is substantially unaffected by material stability, high tolerance requirements, stringent machining requirements, and heat transfer. The method takes a plurality of rectangular-shaped pieces of dielectric material and by a series of appropriate cuts, coatings, and attachments, produces an effective buried long period grating.

Mirror Actuator Control System
See 0176

1059 Multi-Color X-Ray Line Source
J. D. Eversole
Department of the Air Force, Washington, DC
Filed 5 Jan 83, patented 11 Jun 85 9p
PATENT-4 523 327 Available from Comm. of Patents
An anode target comprises a copper block having different elemental target materials bonded to segments of the circumference, which rotate past the electron emitting cath-

ode, to provide different emission lines in sequence. Aluminum and silicon target materials produce lines which bracket the aluminum absorption edge, to detect small amounts of aluminum in the presence of these two lines. Silver and rhodium may be used to bracket the chlorine absorption edge.

1060 Optical Correlator
J. E. Ludman
Department of the Air Force, Washington, DC
Filed 9 Feb 83 15p
PAT-APPL-6-465 227 Available from NTIS: price code A02
This document discloses an optical correlator having a series of optical elements necessary for providing the comparison or correlation of incoming optical signals and for providing a readout beam representive of the correlation between the input signals; and a detection system which is capable of rapidly and reliably detecting intensity peaks in the readout beam. These intensity peaks establish the actual correlation between the optical input signals. The detection system incorporates therein a pair of optical fibers, one of which having associated therewith means for effectively varying the length of that fiber. By varying the effective length of one of the fibers, an intensity detector can provide an output of the intensity peaks necessary in making the actual correlation determination between the optical input signals.

1061 Optical Fiber Coupling Method and Apparatus
W. C. Goss, M. D. Nelson, J. M. Mclauchlan
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 26 Jan 82, patented 18 Jun 85 8p
PATENT-4 523 810 Available from Comm. of Patents
Systems are described for coupling a pair of optical fibers to pass light between them, which enables a coupler to be easily made, and with simple equipment, while closely controlling the characteristics of the coupler. One method includes mounting a pair of optical fibers on a block having a large hole therein, so the fibers extend across the hole while lying adjacent and parallel to one another. The fibers are immersed in an etchant to reduce the thickness of cladding around the fiber core. The fibers are joined together by applying a liquid polymer so the polymer-air interface moves along the length of the fibers to bring the fibers together in a zipper-like manner, and to progressively lay a thin coating of the polymer on the fibers.

1062 Optical Fibers with Reduced Pressure Sensitivity to High Frequency Acoustic Field
N. Lagakos, J. H. Cole, J. A. Bucaro
Department of the Navy, Washington, DC
Filed 30 Jul 84 14p
PAT-APPL-6-635 693 Available from NTIS: price code A02
One object of this invention is to provide a novel optical fiber with reduced phased sensitivity to high frequency (e.g., ultrasonic) acoustic fields. These results can be accomplished by concentrically surrounding an optical fiber with a coating of low bulk modulus which in turn is surrounded by a high bulk modulus material. Such a composition minimizes the fiber phase sensitivity to radial trains which are generated by high frequency acoustic fields.

1063 Optical Mark Reader
B. R. Archambeault
Department of the Air Force, Washington, DC
Filed 18 Oct 84 35p
PAT-APPL-6-662 476 Available from NTIS: price code A03
The reading of the presence or absence of a pencil or similar mark at various locations on a sheet of paper is accomplished by an optical Mark-Reader comprised of a completely solid state sensing mechanism with no moving parts. The Optical Mark Reader (OMR) contains a matrix of light sensitive transistors with their geometry and logic circuits capable of being tailored for a plurality of answer sheets. The internal logic circuits enable certain sections of the page to be read, generate a delay time while the data is being gathered, tell the host computer when the data is complete, and resets the OMR operator control system for successive page readings. Finally, the internal logic circuits and output bus of the OMR takes the 'raw' data from the answer sheets and presents information on an output bus in a format allowing any computer (even a micro-computer) to be the host computer.

1064 Optical RF Downconverter
A. Spezio
Department of the Navy, Washington, DC
Filed 30 Sep 82, patented 28 Aug 84 10p
PATENT-4 468 766 Available from Comm. of Patents
This invention relates generally to frequency conversion devices, and more particularly, to devices having extremely wide band widths for converting to and from optical wavelengths.

Optical Sensing Devices
See 0178

1065 Optical System
J. B. Breckinridge, N. A. Page, R. V. Shack, R. R. Shannon
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 23 Mar 83, patented 5 Feb 85 14p
PATENT-4 497 540 Available from Comm. of Patents
Disclosed is an optical system used in a spacecraft to observe a remote surface and provide a spatial and spectral image of this surface. The optical system includes aspheric and spherical mirrors aligned to focus at a first focal plane an image of the surface, and a mirror at this first focal plane which reflects light back on to the spherical mirror. This spherical mirror collimates the light and directs it through a prism which disperses it. The dispersed light is then focused on an array of light responsive elements disposed at a second focal plane. The prism is designed such that it disperses light into components of different wavelengths, with the components of shorter wavelengths being dispersed more than the components of longer wavelengths to present at the second focal plane a distribution pattern in which preselected groupings of the components are dispersed over essentially equal spacing intervals.

1066 Optoelectronic Integrated Circuit Multiplier
R. E. Reedy, J. H. Harris, D. J. Albares
Department of the Navy, Washington, DC
Filed 20 Jun 85 26p
PAT-APPL-6-746 704 Available from NTIS: price code A03
An apparatus and method for improving VLSI and VHSIC system data transmission relies on a plurality of optoelectronic switches actuated by pulses from at least one light source, a laser. Differing lengths of optical fibers couple the

pulsed light from the laser at different times to create a sequence of actuation light pulses for the plurality of optoelectronic switches each time the light source is pulsed. Thus the information appearing at a plurality of parallel data nodes is converted to serial form at an output bonding pad on the chip. Optionally, a similar pulsing of electroptic switches coupled to an input bonding pad converts serial data to parallel form. Faster input and output switching times are provided, reliability and complexity are reduced, particularly as compared to off-chip arrangements, and power consumption and dissipation are reduced.

Portable Reflectance Spectrometer
See 0610

1067 Spatial Frequency Multiplexed Coherent Optical Processor for Calculating Generalized Moments
J. A. Blodgett, H. H. Szu, C. L. Giles, R. Athale
Department of the Navy, Washington, DC
Filed 10 Jun 82, patented 19 Mar 85 6p
PATENT-4 505 544 Available from Comm. of Patents
An optical processor that can compute the moments of a two-dimensional image in parallel. The image is placed at the plane of a holographic mask which is diposed in the front focal plane of a Fourier-transforming lens and each of the desired moments is found at a respective one of a plurality of photodetectors arrayed in the back focal plane of the lens.

1068 Spatial Light Modulator Having a Capacitively Coupled Photoconductor
D. Armitage.
Department of the Air Force, Washington, DC
Filed 6 Mar 85 13p
PAT-APPL-6-708 926 Available from NTIS: price code A02
The present invention relates generally to the field of optical signal processing apparatus, and more specifically to a spatial light modulator of simplified construction and improved performance. Two-dimensional spatial light modulators are devices which allow control of an optical wavefront for processing or imaging operations. These devices, often referred to as light valves in the literature, have potential for application in large screen display systems as well as in optical data processing systems. One basic form of spatial light modulator comprises a photosensitive semiconductor substrate or wafer, a light blocking layer, a dielectric mirror and an electro-optic crystal (which may in some applications be a liquid crystal), arranged in a sandwich-like composite structure, and having a voltage applied thereacross. The photosensitive semiconductor substrate is often a photodiode formed by depositing p-type silicon substrate and applying a reverse biasing potential thereacross.

1069 Superlattice Ultrasonic Wave Generator
J. J. Quinn, U. Strom, L. L. Chang
Department of the Navy, Washington, DC
Filed 19 Oct 82, patented 4 Sep 84 9p
PATENT-4 469 977 Available from Comm. of Patents
An ultrasonic wave generator comprising a semiconductor superlattice with a periodic variation in its space charge and a far infrared laser for applying a transient electric field to the superlattice transverse to the direction of its periodic variation. The ultrasonic wave produced has a wavelength of the period of the superlattice which can result in 100 gigahertz ultrasonic waves. Structure is included for guiding these waves into an acoustic system.

1070 System of White-Light Density Pseudocolor Encoding with Three Primary Colors
F. T. S. Yu
Department of the Air Force, Washington, DC
Filed 21 Feb 85 24p
PAT-APPL-6-704 109 Available from NTIS: price code A02
This invention relates generally to a method/system of white-light density pseudocolor encoding and, more particularly to a technique of generating density pseudocolor encoding with three primary colors using white-light optical processor. The present invention overcomes the problems encountered in the past techniques of pseudocolor encoding as set forth in detail hereinabove by providing a technique of generating density pseudocolor encoding with three primary colors using a white-light optical processor. A process/system of generating density pseudocolor encoding with three primary colors using a white-light optical processor. Spatial encodings are made with positive, negative and product positive and negative photographic image transparencies and the pseudocoloring is obtained by color filtering of the smeared Fourier spectra. The technique is extremely versatile and economical to operate such that it offers a wide range of applications. Since coherent sources are not utilized, the color coded images are free from coherent artifact noise. Consequently, the system incorporating the method of the present invention can be computer controlled and is extremely effect ive in perceiving optical images as well as being extremely economical and reliable.

1071 Technique for the Reduction of Fading in Interferometers
N. J. Frigo, A. Dandridge, A. B. Tveten
Department of the Navy, Washington, DC
Filed 12 Apr 85 12p
PAT-APPL-6-722 580 Available from NTIS: price code A02
This patent application discloses a passive device for reducing polarization fading in interferometers without significantly degrading the signal-to-noise ratio. In one embodiment, light from an interferometer output is passed through a lens to a polarization mask. The polarization mask comprises at least three independent polarizers which pass independent states of polarizers each independently polarized signal is detected, demodulated and passed to a means for signal extraction.

1072 Technique to Reduce Scattered Light in Optical Systems
M. P. Wirick
Department of the Air Force, Washington, DC
Filed 10 Jan 85 15p
PAT-APPL-6-690 541 Available from NTIS: price code A02
In this patent application, In order to reduce the amount of internally scattered radiant energy in an optical system having a collecting optical chamber and a secondary optical chamber, a moving aperture device is positioned in a first focal plane between the chambers; the aperture device has a continuous moving metal band that has staggered slits therein. The band is sprocket driven and cryogenically cooled to reduce thermal emission. The band can be synced with other scanning detectors in the optical system such as one might find in an infrared telescope used in outer space.

1073 Temperature-Insensitive Optical Fibers
N. Lagakos, J. A. Bucaro
Department of the Navy, Washington, DC
Filed 1 Oct 82, patented 13 Nov 84 4p
PATENT-4 482 205 Available from Comm. of Patents
This invention pertains generally to optical fibers and more particularly to optical fibers with reduced temperature sensitivity. It is an object of this invention to fabricate optical fibers with reduced thermal sensitivity. A further object is to minimize the phase shift of light propagating in a composite optical fiber. These and other objects are achieved by a composite optical fiber comprising a light-propagating core having a minimum variation of the index of refraction with temperature at constant density and at least one outer layer capable of restricting the axial expansion of the core rod without interfering with any radial expansion of the core.

1074 Test Target for Adaptive Optics
F. J. Lamattina
Department of the Air Force, Washington, DC
Filed 13 Oct 83 21p
PAT-APPL-6-541 594 Available from NTIS: price code A02
A test target for adaptive optics comprising, in the preferred embodiment, a plurality of nine adjacent, stacked, and aligned rows of a multiplicity of alternate opaque sections and transparent section in a repeating bar pattern, with all sections being positioned on a flat transparent medium (such as film or glass), and with each opaque section being a opaque bar and with each transparent section being a transparent bar. Each row has a different spatial frequency than any other of the nine rows, with the spatial frequency of any one row being of a different multiple of the row having the lowest spatial frequency. As a matter of preference, the nine adjacent, stacked, and aligned rows are stacked with the first and lowermost row having the lowest spatial frequency, and with the ninth and uppermost row having the highest spatial frequency.

1075 Total Internal Reflection Modulator/Deflector
M. Birnbaum
Department of the Air Force, Washington, DC
Filed 22 Apr 85 21p
PAT-APPL-6-726 872 Available from NTIS: price code A02
This document refers to a total internal reflection modulator/deflector assembly for use with a focused beam of polarized incident laser light. The application of a low direct current voltage (e.g., less than 50 volts) to a pair of identical stacked crystals exhibiting the Pockel's effect produces an index of refraction difference at their interface. Since the index changes are small, the incidence angle of the impinging polarized laser light is large, e.g., 89 degrees. In the preferred embodiment, one crystal is rotated relative to the other, such that the applied electric field causes and index changes of /(delta)n in one crystal and of -(delta)n in the other crystal. As a result, the impinging polarized laser light is refraction into two portions, one of which is totally internal reflected, and transmitted in the desired modulated conditions. Two electrode members are used to apply the low direct current voltage to the interface of the crystals, with the electrodes arranged to face each other across the crystals, and also positioned such that the incident light need not traverse them. (Patent applications).

1076 Transparent Electrode for Optical Switch
J. Goldhar, M. A. Henesian
Department of Energy, Washington, DC
Filed 19 Oct 84 20p
PAT-APPL-6-662 641 Available from NTIS: price code A02
The invention relates generally to optical switches and techniques for applying a voltage to an electro-optical crystal, and more particularly, to transparent electodes for an optical switch. System architectures for very large inertial confinement fusion (ICF) lasers require active optical elements with apertures on the order of one meter. Large aperture optical switches are needed for isolation of stages, switch-out from regenerative amplifier cavities and protection from target retroreflections.

1077 Tunable Acousto-Optic Filter with Improved Spectral Resolution and Increased Aperture
I. C. Chang
Department of the Air Force, Washington, DC
Filed 26 Apr 85 21p
PAT-APPL-6-727 507 Available from NTIS: price code A02
This document refers to a transverse configuration, electronically tunable acousto-optic filter assembly with improved spectral resolution and increased aperture. The crystal prism member is made of TeO(2) and has a large prism angle (i.e., close to 90 degrees). An acoustic prism coupler member made of material with low acoustic velocity (such as TeO(2), AsS(3), or GeAsSe), to avoid total internal reflection of the interface, is bonded in optical contact with a face of the crystal prism member which defines one extreme of the large prism angle, and which is not traversed by a polarized light beam that is transmitted through the crystal prism member and that interacts with a generated, perpendicularly directed, acoustic wave. The use of the acoustic prism couple member, together with the use of a large prism angle in the crystal prism member, result in high spectral resolution and large aperture of the filter assembly and its desired useability in the infrared region. (Patent applications)

1078 Twin-Etalon Scanning Spectrometer
G. J. Hernandez
Department of Commerce, Washington, DC
Filed 22 Oct 82, patented 25 Jun 85 18p
PATENT-4 525 067 Available from Comm. of Patents
A twin-etalon scanning spectrometer is disclosed that provides high luminosity and high resolution. The etalons are positioned in spaced relationship with respect to one another in series in the path of an emission light source. With identical etalons so positioned, a line emission transmitted by the rearwardly positioned etalon is at the same angles as that of the forwardly positioned etalon and the light transmission through the etalons is therefore at a maximum. When the relative spacing of the light transmission elements of one etalon is changed, however, the angles of transmission of the etalons are mismatched and the transmission of the light through the etalons is decreased until a minimum is reached when a lambda/4 change in light transmission element spacing of one etalon relative to the other etalon has been effected. By varying the spacing between maximum and minimum, modulation of the incoming light is effected, which modulated radiation is then collected by a detector with the resulting electrical signals then being processed for display.

1079 Unstable Optical Resonator with Cancelling Edge Waves
T. C. Salvi, M. E. Smithers, G. C. Dente
Department of the Air Force, Washington, DC
Filed 2 Mar 82, patented 16 Oct 84 12p
PATENT-4 477 909 Available from Comm. of Patents
A structural improvement to the feedback (i.e., output) mirror of an unstable optical resonator. The improvement may comprise either a step-like projection (either convex or concave) on the internal surface of the feedback mirror, or a change in curvature of the internal surface of the mirror. Each of these improvements actually constitutes a discontinuity in the internal surface of the mirror, with the curvature of the mirror on either side (i.e., around) the improvement remaining the same. The improvement cancels the interfering edge waves at the geometric source point of the resonator, thereby minimizing the effect of edge diffraction, and results in yielding more geometric modes having relatively uniform intensity profiles and large differences in feedback ratios between the dominant and higher-order modes.

1080 Wide-Angle Flat Field Telescope
K. L. Hallam, B. J. Howell, M. E. Wilson
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 5 Feb 85 16p
PAT-APPL-6-698 641 Available from NTIS: price code A02
An unobscured three mirror wide-angle telescopic imaging system comprised of an input baffle which provides a 20 deg. (Y axis) x 301 deg. (X axis) field of view, a primary mirror having a convex spherical surface, a secondary mirror having a concave ellipsoidal reflecting surface, and a tertiary mirror having a concave spherical reflecting surface. The mirrors comprise mirror elements which are offset segments of parent mirrors whose axes and vertices commonly lie on the system's optical axis. An iris diaphragm forming an aperture stop is located between the secondary and tertiary mirror with its center also being coincident with the optical axis and being further located at the beam waist of input light beams reflected from the primary and secondary mirror surfaces. At the system focus, following the tertiary mirror, is located a flat detector which may be, for example, a TV imaging tube or a photographic film. When desirable, a spectral transmission filter is placed in front of the detector in close proximity thereto.

PHYSICS: Other

Acoustic Scintillation Liquid Flow Measurement
See 0492

Aluminum-Stabilized Nb sub 3 Sn Superconductor
See 0798

1081 Apparatus and Method for Determining the Phase Sensitivity of Hydrophones
A. L. Van Buren
Department of the Navy, Washington, DC
Filed 15 Apr 82, patented 5 Jun 84 14p
PATENT-4 453 238 Available from Comm. of Patents
A method and apparatus for determining the phase angle of the sensitivity of a hydrophone H to be calibrated. The method comprises positioning in a straight line a transducer T that can be used both as a hydrophone and a projector; determining the phase angles of a set of voltages and currents; and finding the phase angle of the sensitivity from the former phase angles. The apparatus includes a framework for positioning P, H and T in a straight line, an electronic system for monitoring the voltages and currents, and a programmed computer for performing a single-point DFT.

1082 Apparatus and Method for the Horizontal, Crucible-Free Growth of Silicon Sheet Crystals
T. F. Ciszek
Department of Energy, Washington, DC
Filed 12 Sep 84 21p
PAT-APPL-6-649 627 Available from NTIS: price code A02
Apparatus is provided for continuously forming a silicon crystal sheet from a silicon rod in a non-crucible environment. The rod is rotated and fed toward an RF coil in an inert atmosphere so that the upper end of the rod becomes molten and the silicon sheet crystal is pulled therefrom substantially horizontally in a continuous strip. A shorting ring may be provided around the rod to limit the heating to the upper end only. Argon gas can be used to create the inert atmosphere within a suitable closed chamber. By use of this apparatus and method, a substantially defect-free silicon crystal sheet is formed which can be used for microcircuitry chips or solar cells.

1083 Apparatus for Locating Passive Intermodulation Interference Sources
J. C. Montovani
Department of the Air Force, Washington, DC
Filed 4 Apr 85 24p
PAT-APPL-6-719 792 Available from NTIS: price code A02
An apparatus for locating passive interference sources by using a pair of different RF signals in conjunction with an acoustic signal to generate intermodulation products in metal-to-metal junctions. The acoustic tagging technique utilizes a focused, high power beam of acoustic energy to mechanically vibrate the suspected offending junction. This mechanical vibration causes the level of intermodulation products that are generated in the junction to become amplitude modulated at the frequency of the acoustic illumination. The detection of the AM sidebands with a low noise RF receiver that is tuned to a particular intermodulated component, permits the offending junction to be located.

Calibration Method for Acoustic Scattering Measurements Using a Spherical Target
See 0506

Combined Riblet and Lebu Drag Reduction System
See 0727

1084 Compensation of Acoustic Wave Devices
A. Ballato
Department of the Army, Washington, DC
Filed 1 Mar 85 16p
PAT-APPL-6-707 346 Available from NTIS: price code A02
Compensation for the effects of environmentally caused changes and aging on piezoelectric acoustic wave devices is electrically provided by the application of a signal, such as a DC bias voltage, to the finger elements of an interdigital transducer formed on the surface of the acoustic wave device. This produces very large field concentrations at the finger edges which act to magnify the electric field and accordingly the electroacoustic effect which alters the acoustic waves and reflected bulk acoustic waves propagating in a piezoelectric substrate between input and output interdigital transducers.

Continuous Laminar Smoke Generator
See 0514

Diamond-Anvil High-Pressure Cell with Improved X-Ray Collimation System
See 0520

Dual Differential Interferometer
See 0525

1085 Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
K. Tabatabaie-Alavi, A. N. M. M. Choudhury, N. J. S. Gabriel, C. G. Fonstad
Department of the Navy, Washington, DC
Filed 1 Mar 83, patented 22 Jan 85 7p
PATENT-4 494 995 Available from Comm. of Patents
A method for Ion implantation using multiple energy Be/ to produce p-type regions in N-IN(.53)GA(.47)AS. A simple technique is used to develop capless annealing of InGaAs up to 700 C. The ion implantation of silicon is then accomplished to create n/ layers in previously Be-implanted InGaAs epilayers. The active efficiency of 40% for 50 KeV Be implant has been found and efficiencies of 86% and 38% are found for the low and high energy Si implants respectively.

Heat Pipe and Method of making same
See 0409

Hollow Cathode Apparatus
See 0554

Laser Generation of Ultrasonic Waveform Reconstructions
See 1049

Laser Schlieren Crystal Monitor
See 0568

1086 Liquid Phase Epitaxy (LPE) of Silicon Carbide
A. Addamiano
Department of the Navy, Washington, DC
Filed 6 Jun 85 16p
PAT-APPL-6-741 784 Available from NTIS: price code A02
A method for making cubic SiC devices comprising the steps of preparing a preform consisting of high purity Si on which a layer of cubic SiC has been deposited by CVD; transferring the preform to a furnace containing a molten bath of Si saturated with SiC at a temperature of between 1600-1800 C, the saturation being insured by the use of a high purity graphite crucible for the Si; dipping the Si-SiC preform into the molten bath and allowing deposition of more cubic SiC on the SiC layer by reducing the temperature of the already formed cubic SiC layer from the preparing step in relation to the rest of the molten bath. Additional steps include adding P-type or N-type dopants to the molten bath or into the CVD process and repeating the above-mentioned steps to create cubic SiC homojunctions; and eliminating any Si adhereing to the surface of the cubic SiC layer.

1087 Liquid-Phase Epitaxial Growth of CdTe on HgCdTe
C. C. Wang, M. Chu
Department of the Army, Washington, DC
Filed 18 Nov 80, patented 2 Nov 82 6p
PATENT-4 357 620 Available from Comm. of Patents
A HgCdTe monolithic focal plane is developed by first growing by liquid-phase epitaxial growth a HgCdTe epilayer with a desired Cd composition on a CdTe substrate, and then by growing a CdTe epilayer on the HgCdTe epilayer. In the resulting structure the HgCdTe layer is designed to sense IR radiation, and the CdTe substrate and the CdTe epilayer are effective in their function as radiation transmitter and as a signal processing. The resulting structure is a heterojunction structure which detects low infrared (IR) energy in the narrow gap semiconductor and transfer the resulting charges to the wider gap semiconductor for signal processing.

1088 Low Defect, High Purity Crystalline Layers Grown by Selective Deposition
A. D. Morrison, T. Daud
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 24 Jun 83, patented 11 Jun 85 6p
PATENT-4 522 661 Available from Comm. of Patents
The purity and perfection of a semiconductor is improved by depositing a patterned mask of a material impervious to impurities of the semiconductor on a surface of a blank. When a layer of semiconductor is grown on the mask, the semiconductor will first grow from the surface portions exposed by the openings in the mask and will bridge the connecting portions of the mask to form a continuous layer having improved purity, since only the portions overlying the openings are exposed to defects and impurities.

LPE (Liquid Phase Epitaxy) Semiconductor Material Transfer Method
See 0710

Method and Apparatus for Measuring Minority Carrier Lifetime in a Direct Band-Gap Semiconductor
See 0580

Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586

1089 Method for Growing Low Defect, High Purity Crystalline Layers
A. D. Morrison, T. Daud
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 28 Feb 85 13p
PAT-APPL-6-706 564 Available from NTIS: price code A02
A method for growing a high purity, low defect layer of semiconductor is described. This method involves depositing a patterned mask of a material impervious to impurities of the semiconductor on a surface of a blank. When a layer of semiconductor is grown on the mask, the semiconductor will first grow from the surface portions exposed by the openings in the mask and will bridge the connecting portions of the mask to form a continuous layer having improved purity, since only the portions overlying the openings are exposed to defects and impurities. The process can be reiterated and the mask translated to further improve the quality of grown layers.

1090 Method for Growth of Crystals by Pressure Reduction of Supercritical or Subcritical Solution
P. J. Shlichta
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 26 Jan 82, patented 23 Apr 85 12p
PATENT-4 512 846 Available from Comm. of Patents
Crystals of high morphological quality are grown by dissolution of a substance to be grown into the crystal in a suita-

ble solvent under high pressure, and by subsequent slow, time-controlled reduction of the pressure of the resulting solution. During the reduction of the pressure interchange of heat between the solution and the environment is minimized by performing the pressure reduction either under isothermal or adiabatic conditions.

91 Method for Synthesizing Indium Phosphide
J. A. Adamski
Department of the Air Force, Washington, DC
Filed 17 Oct 84 19p
PAT-APPL-6-661 623 Available from NTIS: price code A02
This invention relates in general to the synthesis of highly pure, crystalline, indium phosphide (InP). In a more particular aspect, this invention concerns itself with a method for synthesizing crystalline InP under pressures of from about 5 to 30 atmospheres.

92 Method for the Deposition of High-Quality Crystal Epitaxial Films of Iron
R. Kaplan, N. Bottka
Department of the Navy, Washington, DC
Filed 16 Sep 83, patented 2 Apr 85 5p
PATENT-4 508 590 Available from Comm. of Patents
This patent pertains to a method for forming a single crystal epitaxial film of a selected metal on the surface of a substrate. The method includes the steps of positioning the substrate in an ultra high vacuum environment and exposing the substrate surface to a metalorganic vapor including ions of the selected metal while maintaining an ultra high vacuum environment.

lethod for the Preparation of Epitaxial Films of Mercury admium Telluride
ee 0175

093 Method of Preparing Single Crystalline Cubic Silicon Carbide Layers
A. Addamiano
Department of the Navy, Washington, DC
Filed 22 Aug 84 14p
PAT-APPL-6-643 327 Available from NTIS: price code A02
A method of making very pure cubic silicon carbide, SiC, comprising the steps of: loading a first inner graphite cup of a Lely type furnace while cold with a large number of crystals, of SiC that are used as substrates; sealing the first cup with a graphite lid; inserting the first cup with a graphite lid; inserting the first cup into a second graphite cup and inserting them into the furnace; filling the area between the first cup and the second cup with SiC; heating the first cup to between 2300 C and 2700 C until an atmosphere saturated with Si, C, SiC2 and Si2C is created; and cooling the furnace quickly to a temperature less than 1800 C.

1094 Method of Reducing Impurity and Antisite Defects in Semiconductor Crystal Materials, and Device and Apparatus Respectively Produced from and Utilizing Same
M. N. Yoder
Department of the Navy, Washington, DC
Filed 22 Mar 85 19p
PAT-APPL-6-714 666 Available from NTIS: price code A02

Microwave SAW (Surface Acoustic Wave) Monochromator
See 0333

1095 Process for the Epitaxial Deposition of III-V Compounds Utilizing a Binary Alloy as the Metallic Source
K. P. Quinlan, T. E. Erstfeld
Department of the Air Force, Washington, DC
Filed 6 Oct 83, patented 12 Mar 85 6p
PATENT-4 504 329 Available from Comm. of Patents
This patent provides for the deposition of group III-V ternary epitaxial films onto the surfaces of suitable semiconductor substrates. The deposition is accomplished by a vapor phase epitaxy-hydride technique using a group III binary alloy as a group III metal source and phosphine, arsine or stibine as a group V hydride source.

Projection Lens Scanning Laser Velocimeter System
See 0612

1096 Recovery of Fragile Layers Produced on Substrates by Chemical Vapor Deposition
A. Addamiano, P. H. Klein
Department of the Navy, Washington, DC
Filed 12 Apr 83, patented 23 Apr 85 5p
PATENT-4 512 825 Available from Comm. of Patents
This patent pertains to a method of recovering intact at room temperature a layer of a first material, such as silicon carbide, produced by depositing it from the gas phase at a deposition temperature above room temperature on a substrate of a second material, such as silicon, having a different coefficient of thermal expansion than that of the first material. The substrate is separated from the layer prior to cooling, and then the separated layer is cooled to room temperature free of stresses otherwise present as a result of the different thermal expansions of the substrate and layer. The present invention relates generally to coating and more particularly to coating wherein a semiconductor product is produced.

Superlattice Ultrasonic Wave Generator
See 1069

Telescoping Low Vibration Pulling Mechanism for Czochralski Crystal Growth
See 0688

TiW Diffusion Barrier for AuZn Ohmic Contacts to P-Type InP
See 0353

1097 Total Immersion Crystal Growth
A. D. Morrison
National Aeronautics and Space Administration, Pasadena, CA. Pasadena Office
Filed 21 Nov 84 20p
PAT-APPL-6-674 395 Available from NTIS: price code A02
Crystals of wide band gap materials are produced by positioning a holder receiving a seed crystal at the interface between a body of molten wide band gap material and an overlying layer of temperature-controlled, encapsulating liquid. The temperature of the layer deceases from the crystallization temperature of the crystal at the interface with the melt to a substantially lower temperature at which formation of crystal defects does not occur, suitably a temperature of 200 C to 600 C. After initiation of crystal growth, the leading edge of the crystal is pulled through the layer until the leading edge of the crystal enters the ambient gas headspace which may also be temperature controlled. The length of the column of liquid encapsulant may exceed the length of the crystal such that the leading edge and trailing

edge of the crystal are both simultaneously with the column of the crystal. The crystal can be pulled vertically by means of a pulling-rotation assembly or horizontally by means of a low-angle withdrawal mechanism.

Tunable Acousto-Optic Filter with Improved Spectral Resolution and Increased Aperture
See 1077

1098 Vortex Generating Flow Passage Design for Increased Film Cooling Effectiveness
S. S. Papell
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 15 Feb 84, patented 16 Jul 85 8p
PATENT-4 529 358 Available from Comm. of Patents
It is an object of the invention to provide a film cooling apparatus of increased effectiveness and efficiency. In accordance with the invention, a cooling fluid is injected into a hot flowing gas through a passageway in a wall which contains and is subject to the hot gas. The passageway is slanted in a downstream direction at an acute angle to the wall. A cusp shape is provided in the passageway to generate vortices in the injected cooling fluid thereby reducing the energy extracted from the hot gas for that purpose. The cusp shape increases both film cooling effectiveness and wall area coverage. The cusp may be at either the downstream or upstream side of the passageway, the former substantially eliminating flow separation of the cooling fluid from the wall immediately downstream of the passageway.

TRANSPORTATION: Aircraft

1099 Aircraft Rotor Blade with Passive Tuned Tab
T. G. Campbell
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 28 Apr 83, patented 30 Apr 85 10p
PATENT-4 514 143 Available from Comm. of Patents
A structure for reducing vibratory airloading in a rotor blade with a leading edge and a trailing edge includes a cut out portion at the trailing edge. A substantially wedge shaped cross section, inertially deflectable tab, also with a leading edge and a trailing edge is pivotally mounted in the cut out portion. The trailing edge of the tab may move above and below the rotor blade. A torsion strap applies force against the tab when the trailing edge of the tab is above and below the rotor blade. A restraining member is slidably movable along the torsion strap to vary torsional biasing force supplied by the torsion bar to the tab. A plurality of movable weights positioned between plates vary a center of gravity of the tab. Skin of the tab is formed from unidirectional graphite and fiberglass layers. Sliders coupled with a pinned degree of freedom at rod eliminate bending of tab under edgewise blade deflection.

1100 Biodynamic Resistant Control Stick
D. W. Repperger
Department of the Air Force, Washington, DC
Filed 15 Dec 82, patented 16 Oct 84 20p
PATENT-4 477 043 Available from Comm. of Patents
This patent presents an improvement to an aircraft control stick is disclosed. Movement of an aircraft may generate a force which undesirably causes the aircraft pilot to deflect the aircraft's control stick, which thereby results in the aircraft deviating from the desired flight path. The present invention includes a processor-based system which employs an algorithm that generates a signal for causing the control stick to resist such forces. The invention includes a spring and damper connected to the control stick so that the spring constant and damping ratio may be varied.

Chemical Control of Nadimide Cure Temperature and Rate
See 0818

1101 Compartmented, Filament Wound, One-Piece Aircraft Fuel Tanks
E. J. Morrisey
Department of the Air Force, Washington, DC
Filed 22 Feb 84, patented 16 Apr 85 6p
PATENT-4 511 105 Available from Comm. of Patents
An external aircraft fuel tank is provided which comprises a filament-reinforced fuel cell assembled with aerodynamic end shapes having a plurality of layers of adhesive resin-impregnated filament wrappings over the assembly. Also provided is a method for making the fuel tank.

1102 Curved Cap Corrugated Sheet
R. C. Davis, T. T. Bales, D. M. Royster, L. R. Jackson
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 1 Jul 83, patented 18 Sep 84 11p
PATENT-4 472 473 Available from Comm. of Patents
The report describes a structure for a strong, ligthweight corrugated sheet. The sheet is planar or curved and includes a plurality of corrugation segments, each segment being comprised of a generally U-shaped corrugation with a part-cylindrical crown and cap strip, and straight side walls and with secondary corrugations oriented at right angles to said side walls. The cap strip is bonded to the crown and the longitudinal edge of said cap strip extends beyond edge at the intersection between said crown and said side walls. The high strength relative to weight of the structure makes it desirable for use in aircraft or spacecraft.

Elastomer Toughened Polyimide Adhesives
See 0743

1103 Electro-Expulsive Separation System
L. A. Haslim, R. D. Lee
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 31 May 85 51p
PAT-APPL-6-739 792 Available from NTIS: price code A04
An electro-expulsive system has one or more overlapped conductors, each comprising a flexible ribbon conductor, which is folded back on itself. The conductors are embedded in an elastomeric material. Large current pulses are fed to the conductors from power storage units. As a result of the antiparallel currents, the opposed segments of a conductor are forcefully separated and the elastomeric material is distended. Void in the elastomer aid the separation of the conductor segments. The distention is almost instantaneous when a current pulse reaches the conductor and the distention tends to remove any solid body on the surface of the elastomeric material.

1104 Extended Moment Arm Anti-Spin Device
R. D. Whipple
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 27 Jun 83, patented 29 Jan 85 8p
PATENT-4 496 122 Available from Comm. of Patents
A device which corrects aerodynamic spin is provided in which a collapsible boom extends an aircraft moment arm and an anti-spin parachute force is exerted upon the end of

the moment arm to correct intentional or inadvertent aerodynamic spin. This configuration effects spin recovery by means of a parachute whose required diameter decreases as an inverse function of the increasing length of the moment arm. The collapsible boom enables the parachute to avoid the aircraft wake without mechanical assistance, retracts to permit steep takeoff, and permits a parachute to correct spin while minimizing associated aerodynamic, structural and in-flight complications.

1105 Fire Blocking Systems for Aircraft Seat Cushions
J. A. Parker, D. A. Kourtides
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center
Filed 23 Dec 82, patented 7 Aug 84 9p
PATENT-4 463 465 Available from Comm. of Patents
A configuration and method for reducing the flammability of bodies of organic materials that thermally decompose to give flammable gases comprises covering the body with a flexible matrix that catalytically cracks the flammable gases to less flammable species. Optionally, the matrix is covered with a gas impermeable outer layer. In a preferred embodiment, the invention takes the form of an aircraft seat in which the body is a poly(urethane) seat cushion, the matrix is an aramid fabric or felt and the outer layer is an aluminum film.

Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824

Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055

Fire-Resistant Phosphorus Containing Polyimides and Copolyimides
See 0825

1106 Heat Management System for Aircraft
A. H. Mayer
Department of the Air Force, Washington, DC
Filed 22 Sep 83, patented 19 Mar 85 11p
PATENT-4 505 124 Available from Comm. of Patents
A novel heat management system for aircraft is provided which is based on the aircraft fuel as the heat exchange medium and comprises a dedicated thermal reserve fuel tank for containing refrigerated aircraft fuel (or other expendable liquid) which is cooled by heat exchange with the primary aircraft fuel flow to the engines, a fuel line loop for conducting fuel through a plurality of heat exchangers associated with cooling loops for heat generating aircraft systems, and a central microprocessor based controller for controlling fuel flow and temperature throughout the fuel loop system and into the aircraft engine.

1107 Helicopter Anti-Torque System Using Strakes
H. L. Kelley, J. C. Wilson, A. E. Phelps
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 11 Sep 84 12p
PAT-APPL-6-649 329 Available from NTIS: price code A02
A helicopter is disclosed with a system for controlling main-rotor torque which reduces the power and size requirements of conventional anti-torque means. The torque countering forces are generated by disrupting the main rotor downwash flowing around the fuselage. The downwash flow is separated from the fuselage surface by a strake positioned at a specified location on the fuselage. This location is determined by the particular helicopter wash pattern and fuselage configuration, generally being located between 20 deg before top dead center (TDC) and 80 deg from TDC on the fuselage side to which the main rotor blade approaches during rotation. The strake extends along the fuselage from the cabin section to the aft end and can be continuous or separated for aerodynamic surfaces such as a horizontal stabilizer.

High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

1108 Integrated Paratroop Door
J. G. Backlund, D. L. Gibler
Department of the Air Force, Washington, DC
Filed 13 Mar 84, patented 13 Nov 84 5p
PATENT-4 482 113 Available from Comm. of Patents
A deployable platform for use in conjunction with an outwardly opening hinged door on the body structure of a vehicle is described which comprises a hydraulically or pneumatically actuated platform pivotally mounted to the vehicle at the doorway opening and connected to the door by an over center linkage member pivotally connected at one end to the door and at the other to the platform whereby the platform may be deployed and releasably locked into place simultaneously with the opening of the door.

Laminated Thermoplastic Radome
See 0197

1109 Leading Edge Flap System for Aircraft Control Augmentation
D. M. Rao
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 12 Aug 83, patented 4 Dec 84 9p
PATENT-4 485 992 Available from Comm. of Patents
Traditional roll control systems such as ailerons, elevons or spoilers are least effective at high angles of attack due to boundary layer separation over the wing. This invention uses independently deployed leading edge flaps on the upper surfaces of vortex stabilized wings to shift the center of lift outboard. A rolling moment is created that is used to control roll in flight at high angles of attack. The effectiveness of the rolling moment increases linearly with angle of attack. No adverse yaw effects are induced. In an alternate mode of operation, both leading edge flaps are deployed together at cruise speeds to create a very effective airbrake without appreciable modification in pitching moment. Little trim change is required.

Low-Profile Fastener
See 0149

Night Vision Compatible Illumination for Vehicle Crewmember Workspace
See 0419

Optical System for Measuring Shadowgraph Data
See 0179

1110 Over the Wing Propeller
J. L. Johnson, E. R. White
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 16 Oct 84 12p
PAT-APPL-6-661 478 Available from NTIS: price code A02
An aircraft system for increasing the lift drag ratio over a broad range of operating conditions is described. The

system positions the engines and nacelles over the wing in such a position that gains in propeller efficiency is achieved simultaneously with increases in wing lift and a reduction in wing drag. Adverse structural and torsional effects on the wings are avoided by fuselage mounted pylons which attach to the upper portion of the fuselage aft of the wings. Similarly, pylon wing interference is eliminated by moving the pylons to the fuselage. Further gains are achieved by locating the pylon surface area aft of the aircraft center of gravity, thereby augmenting both directional and longitudinal stability. This augmentation has the further effect of reducing the size, weight and drag of empennage components. The combination of design changes results in improved cruise performance and increased climb performance while reducing fuel consumption and drag and weight penalties.

1111 Passive Arm Retention Curtain
T. J. Zenobi
Department of the Navy, Washington, DC
Filed 2 Nov 84 12p
PAT-APPL-667 685 Available from NTIS: price code A02
A pilot arm retention system for an aircraft ejection seat which includes inertia reels and a parachute is comprised of a pair of nets connected between respective sides of the seat and a pair of deployment straps which are releasably coupled to the inertia reel straps and parachute risers and routed down over the front of the seat through a pair of snubbers to fixed points on the cockpit floor.

1112 Piezoelectric Deicing Device
R. Finke, B. Banks
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center
Filed 7 Aug 84 9p
PAT-APPL-6-638 541 Available from NTIS: price code A02
A fast voltage pulse is applied to a transducer which comprises a composite of multiple layers of alternately polarized piezoelectric material. These layers are bonded together and positioned over the curved leading edge of an aircraft wing structure. Each layer is relatively thin and metallized on both sides. The strain produced in the transducer causes the composite to push forward resulting in detachment and breakup of ice on the leading edge of the aircraft wing.

Powered Articulated Headrest System
See 0488

1113 Remote Pivot Decoupler Pylon: Wing/Store Suppression
J. M. Hassler
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center
Filed 10 Jan 85 16p
PAT-APPL-6-690 274 Available from NTIS: price code A02
A device for suspending a store from an aerodynamic support surface, such as an aircraft wing, and more specifically, for improving upon singlet pivot decoupler pylons by reducing both frequency of active store, alignment and alignment system space and power requirements. Two links suspend a lower pylon/rack section, and releasable attached store from an upper pylon section mounted under wing. The links allow the lower pylon section to rotate in pitch about a remote pivot point. A leaf spring connected between the lower section and electrical alignment system servomechanism provides pitch alignment of the lower section/store combination. The servomechanism utilizes an electric servomotor to drive gear train and reversibly move the leaf spring, thereby maintaining the pitch attitude of store within acceptable limits. Damper strokes when lower section rotates to damp large oscillations of store.

1114 Removable Cleanable Antireflection Shield
H. L. Task
Department of the Air Force, Washington, DC
Filed 10 Jan 85 9p
PAT-APPL-6-690 212 Available from NTIS: price code A02
A replaceable anti-reflection shield for the glare surface beneath the windscreen on an aircraft is described which comprises a flexible panel of light absorbing material, such as black cloth, velvet, canvas or plastic, of size and configuration corresponding to that of the glare surface for placement on and conformance to the contour of the glare surface beneath the windscreen, and peripheral attaching means such as adhesive strips, snaps. Velcro strips, suction cups, or similar devices, on the flexible panel for detachably securing the peripheral edges of the panel to the glare surface. Whereby the panel is easily removed for cleaning or replacement.

1115 Translating Rudder Pedal System
G. W. Larson, W. E. Lee, E. N. Lewis
Department of the Air Force, Washington, DC
Filed 30 Jun 82, patented 27 Nov 84 6p
PATENT-4 484 722 Available from Comm. of Patents
A translating rudder pedal system which includes a rudder pedal assembly and a reclinable, translationally moveable, seat operably connected to the pedal assembly, with both the pedal assembly and the seat mounted in a vehicle, such as an aircraft. The system ensures that, irrespective of the movement and positioning of the seat, the feet of the user seated in the seat always remain in contact with the control pedals of the rudder pedal assembly.

TRANSPORTATION: Other

Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
See 0491

1116 Air Bag Restraint System
D. L. Lorch
Department of the Navy, Washington, DC
Filed 2 May 83, patented 2 Apr 85 6p
PATENT-4 508 294 Available from Comm. of Patents
An air bag restraint system is disclosed for protecting an occupant in a seat during ejection from a vehicle, particularly an aircraft. In one perferred embodiment, an air bag member is deployed from a stored position frontally to the chest of the occupant and guided upward and downward along tracks on either side of the seat so that the upper body of the occupant is enclosed within the seat just prior to ejection. In another preferred embodiment, the air bag is stowed within a cover about a semi-circular hoop releasably connected to the seat about the chest of the occupant. At the initiation of the ejection sequence, the cover is released and the air bag inflated, expanded into the proper shape by external restraint straps, so that the head, arms and torso of the occupant are encapsulated at the time of ejection.

Device for Simulating Stress on Packages during Coupling of Railcars
See 0519

1117 **Improved Legislated Emergency Locating Transmitters and Emergency Position Indicating Radio Beacons**
W. R. Wade
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center
Filed 28 Sep 84 23p
PAT-APPL-6-655 606 Available from NTIS: price code A02
An emergency locating transmitting (ELT) system is disclosed which comprises a legislated ELT modified with an interface unit and connected by a multiwire cable to a remote control monitor (RCM), typically located at the pilot position. The RMC can remotely test the ELT by disabling the legislated swept tone and allowing transmission of a single tone, turn the ELT on for legislated ELT transmission, and reset the ELT to an armed condition. The RCM also provides visual and audio indications of transmitter operating condition as well as ELT battery condition. Removing the RCM or shorting or opening the interface input connections are not to affect traditional ELT operation.

1118 **Marginal Terrain Straddle-Lift Container Handler**
C. I. Skaalen, H. G. Lange, P. S. Springston
Department of the Navy, Washington, DC
Filed 1 Apr 85 29p
PAT-APPL-6-718 762 Available from NTIS: price code A03
A highly maneuverable straddle carrier vehicle structure is provided for handling various sizes of containers and outsized loads over rough, unleveled, weak and unprepared soils to meet austere requirements which are beyond the capability of commercial straddle lifts that normally operate on prepared surfaces within specific boundaries of yards and docks. Features include high flotation tires capable of operation over marginal terrain, fording capability, all wheel 360 degree steering and offset wheel yokes which permits automatic changing of wheelbase dimensions for rugged sloping terrain operations and wheel positioning for optimum mobility including lateral and oblique movement and vehicle rotation within its own length for a variety of close quarters operations. Load stabilization devices permit container securing during transit and hinged transverse members operate to reduce torsion and bending moments on the vehicle structure over severe terrain. (Patent Applications).

Night Vision Compatible Illumination for Vehicle Crewmember Workspace
See 0419

Passive Arm Retention Curtain
See 1111

1119 **Pivotable Support for Rescue Hoist**
J. C. Luckachina
Department of the Navy, Washington, DC
Filed 18 Oct 84 9p
PAT-APPL-6-662 122 Available from NTIS: price code A02
A pivotable support mechanism for an aircraft rescue hoist or the like is disclosed. The upright position provides sufficient structural strength to support objects to be lifted by the hoist. The swing-away position provides clearance for access to other equipment without requiring removal of the hoist from the aircraft.

Tire Deflation Mechanism
See 0489

Tire Inflation/Deflation System
See 0490

1120 **Torso Restraint System**
D. L. Lorch
Department of the Navy, Washington, DC
Filed 27 Dec 82, patented 18 Dec 84 7p
PATENT-4 488 691 Available from Comm. of Patents
This patent discloses a harness system for releasably restraining the torso of a crewman in a seat aboard an aircraft. The harness system includes an upper torso restraint adapted to engage the seat at points on either side thereof and wherein a pair of chest straps connected to either side of a backpad are slidingly routed through respective roller fittings in a criss-cross fashion across the crewman to permit upper torso rotation. A separate lower torso restraint is coupled to the upper torso restraint and adapted to engage the seat at the same points of engagement as the upper torso restraint. A single-action release mechanism, actuated manually or automatically by water immersion, disengages both the upper and lower restraints from the seat thereby divesting the crewman of the harness system.

Transdigitizer for Relaying Signals from Global Positioning System (GPS) Satellites
See 0974

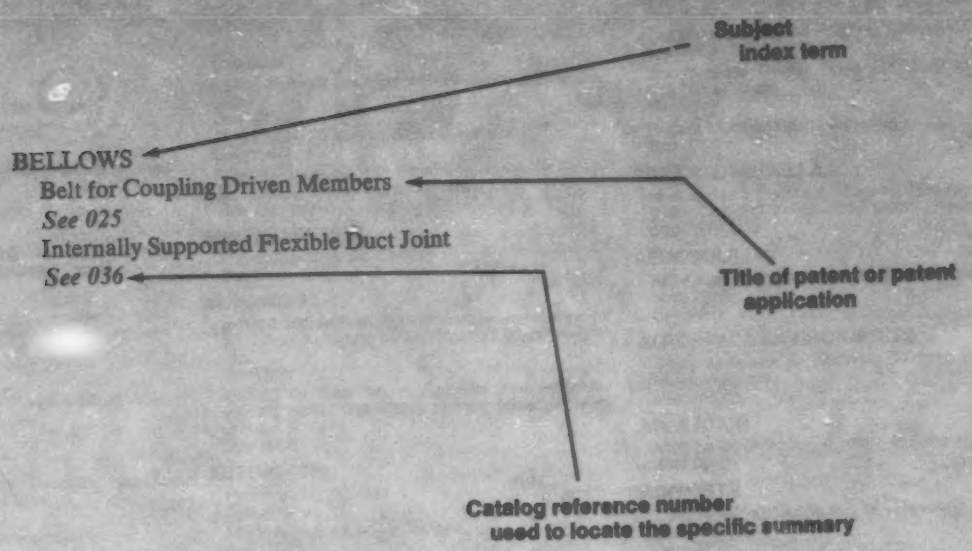
Vehicle-to-Vehicle Connection Mechanism
See 0160

1121 **Windblast Arm Protector Assembly**
R. J. Cummings
Department of the Air Force, Washington, DC
Filed 16 Sep 82, patented 13 Nov 84 5p
PATENT-4 482 112 Available from Comm. of Patents
A windblast arm protector assembly for use by an occupant of an open-type ejection seat of an aircraft. The assembly includes, for each arm of the seat occupant, a full length fabric sleeve member which is independent of any garment body, which is a part of the seat's restraint system (rather than an item of personal protective equipment), and which is shaped and dimensioned from the shoulder area to its wrist area in the form of a flexed (i.e., bent) arm. During ejection of the seat and occupant together, the sleeve member is pulled forwardly and adjacent to the occupant's sides by associated co-acting components of the assembly, such that the arm is not extended into the windblast and is protected from it. Unlike the prior art, this arm protector assembly restrains the wrist area of the seat occupant's arm near the seat ejection handle, while the arm is restrained over its entire length. As a result, the windblast load is uniformly applied, and the restrained arm is protected from injury.

SUBJECT INDEX

Index entries are selected to indicate important ideas and concepts presented in a technology summary. When using the subject index, be sure to look under terms that are narrow, broad, or related to a particular topic. The entries are arranged alphabetically by subject term. Individual items listed under subject terms are arranged alphabetically by title.

Subject Index Sample Entry


Subject index term
BELLOWS
Belt for Coupling Driven Members
See 025
Internally Supported Flexible Duct Joint
See 036
Title of patent or patent application
Catalog reference number used to locate the specific summary

SUBJECT INDEX

ABRASION RESISTANCE
Abrasion-Resistant Durable-Press Acrylic Finishes for Cotton Textiles by Use of Nonoxidative Polymerization Initiators and Accelerators in Two-Stage Heat Curing
See 0790

ABSORBERS(MATERIALS)
Modified Starches as Extenders for Absorbent Polymers
See 0016

ABSORPTION
Nebulization Reflux Concentrator
See 0033

ABSORPTION COEFFICIENTS
Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
See 0585

ABSORPTION COOLING
Ten Degree Kelvin Hydride Refrigerator
See 0428

AC GENERATORS
Coupling an Induction Motor Type Generator to AC Power Lines
See 0455

ACCELERATION
Acceleration Insensitive Oscillator
See 0314
Acceleration Sensitivity Reduction Method
See 0316

ACCELERATION TOLERANCE
Method of Fabricating Acceleration Resistant Crystal Resonators and Acceleration Resistant Crystal Resonators so Formed
See 0330
Random Pattern Tracking Acceleration Tolerance Tester
See 0615

ACCELEROMETERS
Multiple-Stage Integrating Accelerometer
See 0598

ACCUMULATORS
Multistage Spent Particle Collector and a Method for Making Same
See 0674

ACETYL COMPOUNDS
Phenoxy Resins Containing Pendent Ethynyl Groups and Cured Resins Obtained Therefrom
See 0066

ACETYLENE
Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
See 0051

ACETYLENES
Preparation of Polymers of Functionalized Acetylenes
See 0074

ACOUSTIC DETECTION
Method and Apparatus for Detecting Acoustic Emissions from Metal Matrix Wire
See 0577
Phase-Lock Fiber Optic Interferometer
See 0607

ACOUSTIC EMISSIONS
Method and Apparatus for Detecting Acoustic Emissions from Metal Matrix Wire
See 0577

ACOUSTIC EQUIPMENT
Broadband Matching Network
See 0161
Compensation of Acoustic Wave Devices
See 1084
Microwave SAW (Surface Acoustic Wave) Monochromator
See 0333
Variable Length and Sensor Spacing Thermistor Array,
See 0649

ACOUSTIC IMPEDANCE
Method for Thermal Monitoring Subcutaneous Tissue
See 0868
Reactanceless Synthesized Impedance Bandpass Amplifier
See 0282

ACOUSTIC LEVITATION
Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662
High Temperature Acoustic Levitator
See 0703

ACOUSTIC MEASUREMENT
Calibration Method for Acoustic Scattering Measurements Using a Spherical Target
See 0506

ACOUSTIC SCATTERING
Calibration Method for Acoustic Scattering Measurements Using a Spherical Target
See 0506

ACOUSTIC WAVES
Apparatus for Locating Passive Intermodulation Interference Sources
See 1083
Two-Dimensional Bulk Acoustic Wave Correlator-Convolver
See 0299

ACOUSTICS
Acoustic Particle Separation
See 0030

ACOUSTOOPTICS
Acoustically Tuned Optical Filter System
See 1028
High Accuracy Digital Acousto-Optic Matrix Computer
See 1044
Laser Vibrometer
See 0569
Signal Analysis Receiver with Acousto-Optic Delay Lines
See 0288
Superlattice Ultrasonic Wave Generator
See 1069
Tunable Acousto-Optic Filter with Improved Spectral Resolution and Increased Aperture
See 1077

ACRYLIC RESINS
Fluorinated Diacrylic Esters
See 0744

ACTINIDES
Method for Extracting Lanthanides and Actinides from Acid Solutions by Modification of Purex Solvent
See 0031
Method for Recovery of Actinides from Actinide-Bearing Scrap and Waste Nuclear Material Using O sub 2 F sub 2
See 0032

ACTUATORS
Fine Figuring Actuator
See 1041
Mirror Actuator Control System
See 0176
Solar Powered Actuator with Continuously Variable Auxiliary Power Control
See 0441
Termination Load Carrying Device
See 0689

ACYLATION
Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058

ADAPTERS
Low Voltage Two Wire to Four Wire Telephone Circuit Converter Apparatus
See 0101
One-Stop Loading Adapter
See 0677

ADAPTIVE OPTICS
Test Target for Adaptive Optics
See 1074

ADAPTIVE SYSTEMS
Sample Data Phase Locked Loop for Adaptive Doppler Tracker
See 0285

ADDITIVES
Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

ADDRESSING
Automatic Multi-Banking of Memory for Microprocessors
See 0120

ADENOSINE RECEPTORS
Functionalized Congeners of Adenosine Receptor Agonists
See 0907

ADENOSINE + N-ETHYLCARBOXAMIDO
Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056

ADHESIVE BONDING
Adhesive Joint Formation under Field Conditions
See 0138
Hot Melt Adhesive Attachment Pad
See 0745
Impacting Device for Testing Insulation
See 0557
Structural Pressure Sensitive Silicone Adhesives
See 0753

ADHESIVES
Biocompatible Cementitious Dental Compositions
See 0740
Elastomer Toughened Polyimide Adhesives
See 0743
Non-Aqueous Dental Cements Based on Dimer and Trimer Acids
See 0748
Rubber Modified Epoxy Adhesive
See 0750

ADRENAL MEDULLA
Isolation and Culture of Adrenal Medullary Endothelial Cells Producing Blood Clotting Factor VIII: C
See 0919

AEROSOLS
Apparatus for Sampling and Characterizing Aerosols
See 0501

AEROSPACE ENVIRONMENTS
Spray Applicator for Spraying Coatings and Other Fluids in Space
See 0687

AFLATOXIN
Method for Detecting Aflatoxin in Almonds
See 0009

AGONISTS
Functionalized Congeners of Adenosine Receptor Agonists
See 0907

AGRICULTURAL MACHINERY
Apparatus to Improve the Operation of a Continuously Moving Harvester for Tree Crops
See 0002

AIR BAGS
Air Bag Restraint System
See 1116

AIR JETS
Improved Silicon Grinding Method and Apparatus
See 0706

AIR POLLUTION ABATEMENT
Shale Oil Dearsenation Process
See 0399

AIR POLLUTION CONTROL

AIR POLLUTION CONTROL
Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
See 0398

AIR POLLUTION DETECTION
Oxygen Analyzer
See 0606
Solid Sorbent Air Sampler
See 0629

AIR POLLUTION SAMPLING
Sub-Micron Particle Sampler Apparatus and Method for Sampling sub-Micron Particles
See 0632

AIR PRESSURE
Tire Deflation Mechanism
See 0489
Tire Inflation/Deflation System
See 0490

AIR SAMPLERS
Sub-Micron Particle Sampler Apparatus and Method for Sampling sub-Micron Particles
See 0632

AIR SAMPLING
Solid Sorbent Air Sampler
See 0629

AIRCRAFT CONFIGURATIONS
Over the Wing Propeller
See 1110

AIRCRAFT CONSTRUCTION MATERIALS
Curved Cap Corrugated Sheet
See 1102

AIRCRAFT CONTROL
Leading Edge Flap System for Aircraft Control Augmentation
See 1109

AIRCRAFT DOORS
Integrated Paratroop Door
See 1108

AIRCRAFT ENGINES
Over the Wing Propeller
See 1110

AIRCRAFT EQUIPMENT
Compartmented, Filament Wound, One-Piece Aircraft Fuel Tanks
See 1101
Piezoelectric Deicing Device
See 1112
Powered Articulated Headrest System
See 0488

AIRCRAFT MODELS
Optical System for Measuring Shadowgraph Data
See 0179

AIRCRAFT SAFETY
Fire Blocking Systems for Aircraft Seat Cushions
See 1105

AIRCRAFT SEATS
Powered Articulated Headrest System
See 0488
Torso Restraint System
See 1120

AIRCRAFT SPIN
Extended Moment Arm Anti-Spin Device
See 1104

AIRCRAFT STRUCTURES
Elastomer Toughened Polyimide Adhesives
See 0743

AIRFOILS
Aircraft Rotor Blade with Passive Tuned Tab
See 1099
Improved Temperature Detection System for Use on Film Cooled Turbine Airfoils
See 0562

AIRSPEED
Miniature Electrooptical Air Flow Sensor
See 0591

ALCOHOL FUELS
Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
See 0015

ALCOHOLS
Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446
Method and System for Producing Lower Alcohols
See 0392
Microemulsions from Vegetable Oil and Lower Alcohol with Octanol Surfactant as Alternative Fuel for Diesel Engines
See 0396

ALGAE
Salinity Driven Oceanographic Upwelling
See 0023

ALIGNMENT
Alignment and Assembly Tool for Very Large Diameter Cylinders
See 0654
Ingot Slicing Machine and Method
See 0669
Interface Alignment System
See 1048
Low Loss Splicing Method for Single-Mode Optical Fiber
See 1053
Mask Aligner for Solar Cell Fabrication
See 0672

ALKALINE BATTERIES
Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446

ALLOYS
Alloys and Method of Making
See 0796
Method for Making Alloy Additions to Base Metals Having Higher Melting Points
See 0807
Optimizing Hot Workability and Controlling Microstructures in Difficult to Process High Strength and High Temperature Materials
See 0812
Process for Producing Carbide Coatings
See 0767

ALMONDS
Method for Detecting Aflatoxin in Almonds
See 0009

ALTERNATE FUELS
Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
See 0015
Microemulsions from Vegetable Oil and Lower Alcohol with Octanol Surfactant as Alternative Fuel for Diesel Engines
See 0396

ALTERNATING CURRENT
Coupling an Induction Motor Type Generator to AC Power Lines
See 0455
Induction Heating Gun
See 0414
Power Control for AC Motor
See 0312
Three-Phase Power Factor Controller with Induced EMF Sensing
See 0313

ALUMINATES
Method for Preparing Pb- beta ''-Alumina Ceramic
See 0843

ALUMINIUM
Electrically Conductive Containment Vessel for Molten Aluminum
See 0141

ALUMINIUM ALLOYS
Aluminum Battery Alloys
See 0797

AMBULATORS
Integrated Wheelchair and Ambulator
See 0863

AMINES
Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828
Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057
Pharmacologically Active Amine Boranes
See 0065

AMMONIUM COMPOUNDS
Method of Distributing Liquefaction Catalysts in Solid Carbonaceous Material
See 0395

AMORPHOUS MATERIALS
Corrosion Resistant Coating
See 0800
Solid State Hydrogen Pumping and Storage Material
See 0400

AMPLIFIER DESIGN
Measurement Amplifier
See 0268
Reactanceless Synthesized Impedance Bandpass Amplifier
See 0282

AMPLIFIERS
Bidirectional Amplifier
See 0238
Radiofrequency Amplifier Based on a DC Superconducting Quantum Interference Device
See 0281
Temperature Sensitive Oscillator
See 0296

AMPLITUDE MODULATION
Amplitude and Phase Modulation in Fin-Lines Electrical Tuning
See 0355

AMPLITUDES
High Voltage Power Supply
See 0262

AMPOULES
Reusable Thermal Cycling Clamp
See 0156

ANALOG TO DIGITAL CONVERTERS
Analog to Digital Converter
See 0237
Analog-to-Digital Converter
See 0118
Bipolar Digitizer Having Compression Capability
See 0239
Data Acquisition Channel Apparatus
See 0245
Extended Precision in Video Bandwidth Analog to Digital Converter Using Optical Techniques
See 0364
Harmonic Distortion Reduction Technique for Data Acquisition
See 0127
Method of and Apparatus for Generating an Interstitial Point in a Data Stream Having an Even Number of Data Points
See 0130

ANALYZERS
Reduction of Signal Modulation Caused by Polarization in Visible Optical Scanning Systems
See 0180

ANEMOMETERS
Dual Beam Translator for Use in Laser Doppler Anemometry
See 0524

ANGLES(GEOMETRY)
Angular Measurement System
See 0494

ANGULAR VELOCITY
Fluidic Angular Velocity Sensor
See 0545

ANIMAL NUTRITION
Animal Nutrition
See 0001

ANODIC COATINGS
Method for Bonding Insulator to Insulator
See 0747

ANTENNA APERTURES
Clock Distribution Circuit for Active Aperture Antenna Array
See 0219

ANTENNA ARRAYS
Clock Distribution Circuit for Active Aperture Antenna Array
See 0219
Conformal Phased Array Antenna Pattern Corrector
See 0190
Method and Apparatus for Self-Calibration and Phasing of Array Antenna
See 0230
Wide Angle Phased Array Dome Lens Antenna with a Reflection/Transmission Switch
See 0235

ANTENNA COMPONENTS
Deployable Folded Antenna Apparatus
See 0221

ANTENNA FEEDS
Beam Forming Network
See 0218
Hardwire Missile Receiver Coupler
See 0225
Low Sidelobe, High Efficiency Mirror Antenna with Twist Reflector
See 0229
Printed Circuit Balun with a Dipole Antenna
See 0232

ANTENNA RADIATION PATTERNS
Radio Frequency Lens Antenna
See 0233

ANTENNAS
Integrated Defense Communications System Antijamming Antenna System
See 0226
Reducing Grating Lobes Due to Subarray Amplitude Tapering
See 0234

ANTI ARCING COATING
Moisture Absorbing Anti-Arcing Coating and Method For Applying Same
See 0762

ANTIBODIES
Competitive ELISA (Enzyme-Linked Immunosorbent Assay) for the Detection of Antibodies
See 0902
Enhancement of Specific Antibody Production with Anti-IgD Antibodies
See 0904
Enzyme-Linked Immunosorbent Assay (ELISA) for Determining Anti-Bodies against Herpes Simplex Virus (HSV) Types 1 and 2 in Human Sera
See 0905
Monoclonal Antibodies Against Chlamydial Genus Specific Lipopolysaccharide
See 0890
Monoclonal Antibodies Reactive with Human Breast Cancer
See 0927
Monoclonal Antibodies to Porcine Immunoglobulins
See 0929
Prevention of Graft Versus Host Disease Following Bone Marrow Transplantation
See 0892
Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
See 0938
Therapeutic and Diagnostic Monoclonal Antibody Specific for Human T-Cell Leukemia Virus Type 1 Envelopes Protein
See 0950

ANTIBODY BLOCKING
Human SCLC (Small Cell Lung Cancer) Autocrine Growth Factors and Monoclonal Antibody Blocking the Same
See 0909

ANTIFOULING COATINGS
Process for Preparation of Crosslinked Poly(tri-n-butyltin) Methacrylate with Simultaneous Particle Size Reduction
See 0076

ANTIGENS
Purified Antigen from Non-A, Non-B Hepatitis Causing Factor
See 0942
T-Cell Receptor-Specific for Antigen Polypeptides and Related Polynucleotides
See 0949

ANTIINFLAMMATORY AGENTS
Antiinflammatory 2,3-Didemethylcolchicine and Derivatives
See 0885
Pharmacologically Active Amine Boranes
See 0065

ANTIJAMMING
Integrated Defense Communications System Antijamming Antenna System
See 0226

ANTIMALARIALS
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889
4-Methyl-5-(Unsubstituted and Substituted Phenoxy)-6-Methoxy-8-(Aminoalkylamino)Quinolines
See 0897

ANTIMICROBIAL AGENTS
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889

ANTINEOPLASTIC AGENTS
Carbamates of Colchicine for Treatment of Gout
See 0046
New Antineoplastic Platinum (IV) Complexes
See 0063
Substantially Purified Tumor Growth Inhibitory Factor (TIF)
See 0895

ANTIPARASITIC DRUGS
Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
See 0884

ANTIREFLECTION COATINGS
Removable Cleanable Antireflection Shield
See 1114

ANTITRYPANOSOMAL AGENTS
Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
See 0884

ANTITRYPANOSOME FACTOR
Lysis of 'Trypanosoma Cruzi'
See 0921

APPLICATORS
Wet Film Applicator
See 0696

AQUACULTURE
Salinity Driven Oceanographic Upwelling
See 0023

ARC SPRAYING
Arc Spray Fabrication of Metal Matrix Composite Monotape
See 0772

AREA
New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434

AROMATIC COMPOUNDS
Method for Making Heterocyclic Block Copolymers
See 0060
Polyaromatic Ether-Sulfone-Keytones with Fluoro-Substituted-P-Cyclophane Units as Cross-Linking Sites
See 0071

AROMATIC HYDROCARBONS
Method for Introducing Fluorine into an Aromatic Ring
See 0059

ARRAYS
Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
See 1054
Method and Apparatus for Generating a Structured Light Beam Array
See 1056
Transmission Line Biased Coherent Array of Josephson Oscillators
See 0298

ARSENIC
Shale Oil Dearsenation Process
See 0399

ARYL ETHERS
Thermally Stable Thermoset Resin Compositions
See 0837
Thermosetting Arylether Compounds and Their Synthesis
See 0090

ASSEMBLIES
Emitted Vibration Measurement Device and Method
See 0533
Self-Locking Mechanical Center Joint
See 0685

ASSEMBLING
Alignment and Assembly Tool for Very Large Diameter Cylinders
See 0654

ASSEMBLY
Double Pinch-Push Contact Insertion End-Effector
See 0663

ATMOSPHERIC NOISE
Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

ATMOSPHERIC PRESSURE
Method of and Apparatus for Measuring Temperature and Pressure
See 0587

ATMOSPHERIC TEMPERATURE
Echometry Device and Method
See 0528
Method of and Apparatus for Measuring Temperature and Pressure
See 0587

ATMOSPHERIC TRANSMISSIVITY
Atmospheric Transmissometer
See 0502

ATMOSPHERICS

Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
See 0585

ATMOSPHERICS

Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

ATOMIC EXCITATIONS

Double Photon Excitation of High-Rydberg Atoms as a Long-Lived Submillimeter Detector
See 0169

ATOMIZATION

Air Blast Type Coal Slurry Fuel Injector
See 0387

Method of Burning Lightly Loaded Coal-Water Slurries
See 0394

ATTACHMENT

Attachment Method-Ceramic Radome to Metal Body
See 0699

ATTENUATORS

Combined Microwave Parallel Amplifier-RF Attenuator/Modulator
See 0242

ATTITUDE CONTROL

Emitted Vibration Measurement Device and Method
See 0533

ATTRACTANTS

Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052

Method and Composition for Luring Coyotes
See 0923

Ovipositional Stimulant for Trichogramma Spp
See 0933

Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

AUDIO SIGNALS

Method and Apparatus for Operating on Companded PCM (Pulse Code Modulation) Voice Data
See 0102

AUGER ELECTRON SPECTROSCOPY

Method for Predicting the Performance of Cathode Materials
See 0329

AUTOLOGOUS BLOOD TRANSFUSION

Forward Field Autotransfusion Device
See 0857

AUTOMATIC CONTROL

Linear Magnetic Bearings
See 0670

AUTOMATIC GAIN CONTROL

Constant Rise AGC (Automatic Gain Control) Device
See 0244

Gain Restoration after Doppler Filtering
See 0195

AUTOMATIC TIRE INFLATION + DEFLATION SYSTEM

Tire Inflation/Deflation System
See 0490

AUTOMATION

Automated Calibration Technique for Non-Field Perturbing (Electrically Small) Electromagnetic Field Sensors
See 0503

AVALANCHE DIODES

Self-Detecting Optical Sensors
See 0385

AXES OF ROTATION

Shoulder and Hip Joint for Hard Space Suits and the Like
See 0677

AXIAL FLOW

Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417

AZIDES

Azido Nitramino Ethers
See 0043

BACKGROUND NOISE

Apparatus for Eliminating Background Interference in Fluorescence Measurements
See 0850

BACTERIA

Method for Screening Bacteria and Application Thereof for Field Control of Pythium spp. on Small Grain Crops
See 0013

Monoclonal Antibodies Against Chlamydial Genus Specific Lipopolysaccharide
See 0890

Pseudomonas Exotoxin Conjugate Immunotoxins
See 0941

BACTERIAL DISEASES

Vaccine Against Neisseria Meningitidis Group B Serotype 2 Invasive Disease
See 0951

BACTERIOPHAGES

Cloning and Expression of the Gene for Bacteriophage T7 RNA Polymerase
See 0901

BAKERY PRODUCTS

Method for Preparing Improved Quality Rice-Containing Baked Products
See 0011

BALUNS

Printed Circuit Balun with a Dipole Antenna
See 0232

BANDPASS FILTERS

Bandpass Filter Formed by Serial Gratings Operating in a Wood's Anomaly Region
See 1030

Reactanceless Synthesized Impedance Bandpass Amplifier
See 0282

Slot Line Tunable Bandpass Filter
See 0290

BANDSTOP FILTERS

Dual Mode Directionally Coupled Band Reject Filter Apparatus
See 0249

Microwave Bandstop Filter
See 0271

BARIUM TITANATES

Process of Synthesizing Mixed BaO-TiO2 Based Powders for Ceramic Applications
See 0336

BARRIERS

Detonation Transfer Evaluation Technique
See 0517

BATHYTHERMOGRAPHS

Expendable Bathythermograph for Measuring Light Attenuation and Temperature Below the Ocean Surface
See 0731

Test Device for Expendable Bathythermograph Set (XBT)
See 0638

BATTERY CHARGERS

Battery Charger
See 0448

Battery Control and Fault Detection Method
See 0449

BATTERY SEPARATORS

Fuel Cell Separator Plate with Bellows-Type Sealing Flanges
See 0461

Fuel Cell Separator with Compressible Sealing Flanges
See 0462

BATTERY TESTERS

Nickel-Cadmium Battery Conditioner and Tester Apparatus
See 0471

BATTLES

Deep Ocean Wide Band Acoustic Baffle
See 0162

BEADS

Method for Thermal Monitoring Subcutaneous Tissue
See 0868

BEAM BUNCHERS

Broad-Band Beam Buncher
See 0358

BEAM CURRENTS

Beam Current Sensor
See 0504

BEAM MONITORING

Gap and Stripline Combined Monitor
See 0547

BEAM STEERING

Total Internal Reflection Modulator/Deflector
See 1075

BEAMS(RADIATION)

Beam Forming Network
See 0218

BEAMS(SUPPORTS)

Wood Beam
See 0848

BEARINGS

Emitted Vibration Measurement Device and Method
See 0533

BEEF

Method for Predicting the Acceptability of Coarsely Ground Beef
See 0010

BENZENE

Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

BENZENE + BENZYL-METHYLENE-DIOXY

Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxbenzenes in Insect Population Control
See 0072

BENZOIC ANILIDE + HYDROXY

Topical Prophylaxis against Schistosomal Infections
See 0025

BENZOTHIAZOLE + PHENYL

Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
See 0051

BINARY PROCESSORS

Variable Data Base Generator Apparatus
See 0136

BIOASSAY

Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058

Method for Simultaneously Monitoring Turnover Rate in Multiple Proteins
See 0926

Rapid Bioassay and a Kit for Peptide Hormones
See 0944

BIOLOGICAL DETECTION
Biological Sensor for the Detection of Toxicants
See 0505
Method and Apparatus for the Detection of Toxicants
See 0584

BIOLOGICAL INSECT CONTROL
Oviposltional Stimulant for Trichogramma Spp
See 0933

BIOLOGICAL PEST CONTROL
Boll Weevil Trap
See 0900
Control of Eastern Black Nightshade with a Fungal Pathogen
See 0003

BIOMASS
Microemulsions from Vegetable Oil and Lower Alcohol with Octanol Surfactant as Alternative Fuel for Diesel Engines
See 0396

BIOPSY
Guided Trephine Samples for Skeletal Bone Studies
See 0858

BIPOLAR TRANSISTORS
Self-Detecting Optical Sensors
See 0385

BISTATIC RADAR
Bistatic Coherent Radar Receiving System
See 0189
Range-Only Multistatic Radar System
See 0212

BITUMENS
Fluidized Bed Gasification of Extracted Coal
See 0388

BITUMINOUS COAL
Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
See 0398

BLACK LIQUORS
Membrane Processes for Separation of Organic Acids from Kraft Black Liquors
See 0841

BLADE RETAINERS
High Pressure Turbine Rotor Two-Piece Blade Retainer
See 0145

BLADE TIPS
Oxidizing Seal for a Turbine Tip Gas Path
See 0749

BLOCK COPOLYMERS
Method for Making Heterocyclic Block Copolymers
See 0060

BLOOD
Blood Lysis and Culture System
See 0899

BLOOD ANALYSIS
Infrared Optical Measurement of Blood Gas Concentrations and Fiber Optic Catheter
See 0862

BLOOD CELLS
Human Monocytes Cultured in Suspension in Serum-Free Medium
See 0908

BLOOD COAGULATION FACTORS
Isolation and Culture of Adrenal Medullary Endothelial Cells Producing Blood Clotting Factor VIII: C
See 0919

BLOOD GASES
Infrared Optical Measurement of Blood Gas Concentrations and Fiber Optic Catheter
See 0862

BLOOD PRESSURE NANOMETERS
Blood Pressure Cuff Calibration System
See 0851

BLOOD TRANSFUSION
Forward Field Autotransfusion Device
See 0857

BODY TEMPERATURE
Method for Thermal Monitoring Subcutaneous Tissue
See 0868

BOILERS
Carbon Granule Probe Microphone for Leak Detection
See 0509

BOLL WEEVILS
Boll Weevil Trap
See 0900

BOLOMETERS
Fast Granular Superconducting Bolometer
See 0536

BONDED JOINTS
Adhesive Joint Formation under Field Conditions
See 0138

BONDING
Insulation Bonding Test System
See 0565
Method for Bonding Insulator to Insulator
See 0747
Method for Ultrasonic Bonding to Soft Microelectronic Substrates
See 0715

BONE MARROW
Prevention of Graft Versus Host Disease Following Bone Marrow Transplantation
See 0892

BONE PLATES
Drill Guide for Bone Plate Fixation
See 0853

BONES
Guided Trephine Samples for Skeletal Bone Studies
See 0858
Osteoclast for Whole Bone Testing
See 0870
Polyactic-Polyglycolic Acid Copolymer Combined with Decalcified Freeze-Dried Bone for Use as a Bone Repair Material
See 0872

BOOMS(EQUIPMENT)
Extended Moment Arm Anti-Spin Device
See 1104

BORANES
Pharmacologically Active Amine Boranes
See 0065

BOREHOLES
Method of Enhancing the Removal of Methane Gas and Associated Fluids from Mine Boreholes
See 0959
Self-Actuating Vacuum Gas/Liquid Separator
See 0963

BORON NITRIDES
BN (Boron Nitrates) Coating of Ceramic Fibers for Ceramic Fiber Composites
See 0756

BORON OXIDES
Method for Removing Oxide Contamination from Silicon Carbide Powders
See 0844

BOULES
Ingot Slicing Machine and Method
See 0669

BOUNDARY LAYER FLOW
Combined Riblet and Lebu Drag Reduction System
See 0727

BOXES(CONTAINERS)
Double Window Viewing Chamber Assembly
See 0522

BRAGG CELLS
Bragg Cell Spectrum Analyzer Specification
See 1031

BRAKES
Compact Brake Structure
See 0660

BRATTICES
Extensible Brattice Support System for Mine Face Ventilation
See 0954

BRAZING
Improved Brazing Technique
See 0705

BREAST CARCINOMA
Monoclonal Antibodies Reactive with Human Breast Cancer
See 0927
Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
See 0938

BROADBAND
Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
See 0589

BROADBAND ANTENNAS
Compact Wideband Multiple Conductor Monopole Antenna
See 0220

BROADBAND TRANSDUCERS
Lightweight, Broadband Rayleigh Wave Transducer
See 0327

BRUSHES
High Current Fiber Brush Collector and Method for Making Same
See 0309

BULKHEADS
Method of Making an Undersea, High Pressure Bulkhead Penetrator for Use with Fiber Optic Cables
See 0734

BUOYS
Wave Powered Buoy Generator
See 0739

BUS NETWORKS
Survivable Local Area Network
See 0111

CABLE ASSEMBLIES
Device for Controlling Optical Fiber Twist on a Bobbin
See 1033
Releasable Cable Connector Assembly for Use between a Mobile and Stationary Object
See 0154

CABLE CUTTING DEVICES
Deep Submergence Vehicle (DSV) Lightweight Cable Cutter,
See 0729

CABLES
Improved Ship Deck Lifeline
See 0732
Metallized Synthetic Cable
See 0372

CADMIUM MERCURY TELLURIDES
Method for the Preparation of Epitaxial Films of Mercury Cadmium Telluride
See 0175

CADMIUM TELLURIDES
Liquid-Phase Epitaxial Growth of CdTe on HgCdTe
See 1087

CALCIUM THIONYL CHLORIDE CELLS
Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451

CALCULI
Apparatus for Disintegrating Kidney Stones
See 0849

CALIBRATING
Means and Method for Calibrating a Photon Detector Utilizing Electron-Photon Coincidence
See 0174
Method and Apparatus for Self-Calibration and Phasing of Array Antenna
See 0230
Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers
See 0605
Tone Calibrated Digital Radio Communication System
See 0115

CALIBRATION
Automated Calibration Technique for Non-Field Perturbing (Electrically Small) Electromagnetic Field Sensors
See 0503
Calibration Method for Acoustic Scattering Measurements Using a Spherical Target
See 0506
Directional Line-Hydrophone Array Calibrator
See 0163

CAMERA TUBES
Two-Dimensional Bulk Acoustic Wave Correlator-Convolver
See 0299

CANISTER PROJECTILES
Lateral Support System for Canister-Launched Missile
See 0746

CAPACITANCE
Capacitance Measuring Device
See 0507

CAPACITORS
Interdigital Schottky Barrier Capacitor Apparatus
See 0326

CAPSULES(PHARMACY)
Magnetically-Localizable, Polymerized Lipid Vesticles and Method of Disrupting Same
See 0888

CARBAMATES
Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
See 0884
Carbamates of Colchicine for Treatment of Gout
See 0046

CARBAMIC ACID + N-HYDROXYMETHYL
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0793

CARBIDES
Process for Producing Carbide Coatings
See 0767

CARBITOL + BUTYL
Process and Compositions for Preserving Fresh Hides and Skins
See 0846

CARBON
Apparatus for Producing Diamond-Like Carbon Flakes
See 0755
Carbon Granule Probe Microphone for Leak Detection
See 0509
Deposition of Diamondlike Carbon Films
See 0757
Textured Carbon Surfaces on Copper
See 0770

CARBON ARCS
Diamondlike Flakes
See 0758

CARBON BLACK
Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

CARBON CARBON COMPOSITES
Circumferentially Wrapped Carbon-Carbon Structure
See 0773
Erosion-Resistant Nosetip Construction
See 0777
Erosion-Resistant Nosetip Construction
See 0778
Lightweight Piston
See 0782

CARBON DIOXIDE LASERS
CO2 Laser Stabilization and Switching
See 0993
Ground Slot Waveguide Laser
See 1000
Multiple Parallel RF Excited CO2 Lasers
See 1012

CARBON FIBERS
Circumferentially Wrapped Carbon-Carbon Structure
See 0773

CARBON MONOXIDE
Method and System for Producing Lower Alcohols
See 0392

CARBON REINFORCED COMPOSITES
Erosion-Resistant Nosetip Construction
See 0777
Erosion-Resistant Nosetip Construction
See 0778

CARBOXYLIC ACIDS
Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446

CARGO
Portable Pallet Weighing Apparatus
See 0609

CARGO HANDLING
Cargo Handling System
See 0659

CARGO TRANSPORTATION
Device for Simulating Stress on Packages during Coupling of Railcars
See 0519

CARICA PAPAYA
Quarantine System for Papaya
See 0943

CARRIER LIFETIME
Method and Apparatus for Measuring Minority Carrier Lifetime in a Direct Band-Gap Semiconductor
See 0580

CARRIER VEHICLES
Marginal Terrain Straddle-Lift Container Handler
See 1118

CARROUSELS
Optical Disc Transport System
See 0980

CASSEGRAINIAN OPTICAL SYSTEMS
Dual-Secondary Mirror Cassegrain Optical System
See 1037

CASTING
Method and Apparatus for Casting Conductive and Semi-Conductive Materials
See 0711

CASTINGS
Method for Refining Microstructures of Cast Titanium Articles
See 0809

CATALYSTS
Fluidized Bed Gasification of Extracted Coal
See 0388
Improved Catalysts for Carbon and Coal Gasification
See 0389
Integrated Current Collector and Catalyst Support
See 0464
Method of Distributing Liquefaction Catalysts in Solid Carbonaceous Material
See 0395
Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470

CATHETERS
Improved Toposcopic Catheter and Method of Fabrication
See 0861
Infrared Optical Measurement of Blood Gas Concentrations and Fiber Optic Catheter
See 0862

CATHODES
Apparatus for Mounting a Field Emission Cathode
See 0318
Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451
Method for Predicting the Performance of Cathode Materials
See 0329
P-N Junction Controlled Field Emitter Array Cathode
See 0378

CATHODES(ELECTROLYTIC CELL)
Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

CATHODES(ELECTRON TUBES)
Atomically Mixed Alloy Coated Cathodes Specification
See 0356

CATION EXCHANGING
Method for Reducing Sodium Content and Simultaneously Increasing Potassium Content of a Food
See 0012

CAVITIES
High Switching Speed Electrically Tuned Microwave Magnetic Resonance Devices
See 0261
Magnetically-Localizable, Polymerized Lipid Vesticles and Method of Disrupting Same
See 0888

CAVITY RESONATORS
Coaxial Cavity Gunn Oscillator Using Probe Coupled Microstrip
See 0240
Image Line Voltage Controlled Oscillator with Replaceable Components
See 0263
Integrated Circuit Tunable Cavity Oscillator
See 0264
Jinc-Trap Resonator
See 1007
Maser Cavity Servo-Tuning System
See 1009
Monochromatic Radio Frequency Accelerating Cavity
See 0334

CELL FLOW SYSTEMS
Apparatus for Eliminating Background Interference in Fluorescence Measurements
See 0850

CELL LINES
Immortal Line of Human Fetal Glial Cells
See 0911
Therapeutic and Diagnostic Monoclonal Antibody Specific for Human T-Cell Leukemia Virus Type 1 Envelopes Protein
See 0950

CELL MORPHOLOGY
Improved Polyethylene Glycol (PEG) Reagent
See 0913

CELLS(BIOLOGY)
Method for Obtaining Periplasmic Proteins from Bacterial Cells Using Chloroform
See 0924

CELLULOSIC RESINS
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0793

CENTRAL PROCESSING UNITS
Anthmetic Pipeline for Image Processing
See 0119
Pipelined Digital SAR Azimuth Correlator Using Hybrid FFT-Transversal Filter
See 0207

CENTRIFUGES
Multi-Layer Coil Countercurrent Chromatograph with Adjustable Revolutional Radius
See 0596
Random Pattern Tracking Acceleration Tolerance Tester
See 0615

CENTRIFUGING
Method and Apparatus for Sequential Fractionation
See 0583

CERAMIC BODIES
Attachment Method-Ceramic Radome to Metal Body
See 0699

CERAMIC COATINGS
Moisture Absorbing Anti-Arcing Coating and Method For Applying Same
See 0762
Thermal Barrier Coating System
See 0771

CERAMIC FIBERS
BN (Boron Nitrates) Coating of Ceramic Fibers for Ceramic Fiber Composites
See 0756

CERAMIC MATERIALS
Hot Rolling of Ceramics by the Use of Self Propagating Synthesis
See 0704

CERAMICS
Method of Preparing Thin Porous Sheets of Ceramic Material
See 0845
Pressurized Heat Treatment of Glass Ceramic
See 0721

CERMETS
Overlay Metallic-Cermet Alloy Coating Systems
See 0763

CHAIRS
Integrated Wheelchair and Ambulator
See 0863
Portable Reclining Examination Chair
See 0873

CHAMBERS
Transmissive Dewar Cooling Chamber for Optically Pumped Semiconductor Ring Lasers
See 1024

CHANNEL FLOW
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413

CHARGE COUPLED DEVICES
CCD (Charge-Coupled Device) Gaussian Convolution Method
See 0359
Parallel Programmable Charge Domain Device
See 0347
Pipelined Programmable Charge Domain Device
See 0348

CHARGE EFFICIENCY
Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586
State-of-Charge Coulometer
See 0631

CHARGE TRANSFER
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766

CHARGED PARTICLES
Multistage Spent Particle Collector and a Method for Making Same
See 0674

CHARS
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

CHELATING AGENTS
Chelating Agents for the Treatment of Iron Overload
See 0886

CHEMICAL AGENT DETECTORS
Chemical Sensor Matrix
See 0511
Gas Contamination Detection Device
See 0548
Optical 3-D Signature Device for Detecting Chemical Agents
See 0604

CHEMICAL AGENTS
Improved Chemical Sensor Matrix
See 0558
Rusty Bolt Intermodulation Interference Reducer
See 0816
Surface Acoustic Wave Device for Sensing the Presence of Chemical Agents
See 0633

CHEMICAL ANALYSIS
Apparatus and Method for Identification of Matrix Materials in Which Transuranic Elements Are Embedded Using Thermal Neutron Capture gamma-Ray Emission
See 0026
Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
See 0578
Silver Stains for Protein in Gels-A Modified Procedure
See 0947

CHEMICAL COMPOSITION
Fluorinated Aliphatic Polyalkylether Lubricant with an Additive Composed of an Aromatic Phosphine Substituted with Perfluoroalkylether Groups
See 0839

CHEMICAL DETECTION
Dermal Substance Collection Device
See 0516
Improved Chemical Sensor Matrix
See 0558

CHEMICAL EXPLOSIVES
Ethylenediamine Salt of 5-Nitrotetrazole and Preparation
See 0054
Preparation of Ethylenediamine Dinitrate
See 0073

CHEMICAL FEEDSTOCKS
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

CHEMICAL LASERS
Delta Wing Nozzle Assembly for Chemical Lasers
See 0994
Halogen Mass Flow Rate Detection System
See 1001
Optically Pumped Iodine Monofluoride Laser
See 1014

CHEMICAL REACTIONS
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0047
Fire-Resistant Phosphorus Containing Polyimides and Copolyimides
See 0825

CHEMICAL REACTORS
Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
See 0496
Solar-Heated Oil Shale Retort
See 0442

CHEMICAL TESTS
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0048

CHEMICAL VAPOR DEPOSITION
Improved Process for the Preparation of Fiber-Reinforced Ceramic Composites by Chemical Vapor Deposition
See 0780

CHEMICALS
Dermal Substance Collection Device
See 0516
Improved Chemical Sensor Matrix
See 0558

CHIPS(ELECTRONICS)
Hermetic Chip Carrier Compliant Soldering Pads
See 0258
Integrated Wavelength Demultiplexer
See 0369

CHLORINATED ALIPHATIC HYDROCARBONS
Method for Removing Chlorine Compounds from Hydrocarbon Mixtures
See 0393

CHLORINATED HYDROCARBONS
Soil Extraction Kit
See 0627

CHLOROFORM
Method for Obtaining Periplasmic Proteins from Bacterial Cells Using Chloroform
See 0924

CHROMATOGRAPHIC ANALYSIS
Multi-Layer Coil Assembly Coaxially Mounted Around the Rotary Axis for Preparatory Countercurrent Chromatography
See 0595

CHROMATOGRAPHY
Electrochromic Display Device
See 0362
Modulated Voltage Metastable Ionization Detector
See 0593
Multi-Layer Coil Countercurrent Chromatograph with Adjustable Revolutional Radius
See 0596

CHROMIUM
Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470
Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785

CHROMOSOMES
Deoxyribonucleic Acid Molecules Useful as Probes for Detecting Deleterious Genes Incorporated into Chromosomal DNA
See 0903

CIRCUIT BOARDS
Beam Forming Network
See 0218

CIRCUIT INTERCONNECTIONS
EMI (Electromagnetic Interference) Filter Capacitor Unit
See 0252
Survivable Local Area Network
See 0111

CIRCUIT RELIABILITY
Split-Cross-Bridge Resistor for Testing for Proper Fabrication of Integrated Circuits
See 0725

CIRCUIT TESTERS
Diagnostic Apparatus for Radar Pulse Repetition Frequency Control Circuit Card
See 0192

CIRCUITS
Apparatus for Non-Destructive Inspection of Blind Holes
See 0500
Dielectric Resonator Stabilized Microstrip Oscillator
See 0247
High Voltage Power Supply
See 0262
Measurement Amplifier
See 0268
New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434
Protection Circuitry for High Voltage Drivers
See 0280
Tally Cell Circuit
See 0295
Temperature Sensitive Oscillator
See 0296

CIRCULATION CONTROL AIRFOILS
Helicopter Anti-Torque System Using Strakes
See 1107

CLADDING
Lightweight Cladding for Magnetic Circuits
See 0266

CLAMPS
Pneumatic Clamping Device
See 0153
Reusable Thermal Cycling Clamp
See 0156

CLEANERS
Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
See 0496

CLEANING
Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
See 0496

CLEANING COMPOUNDS
Composition and Method for Cleaning Embedded Soil from Surfaces Having Low Gloss Coatings
See 0819

CLEARANCES
Method and Apparatus for Measuring Press Roll Clearance
See 0581

CLOCKS
Balanced System for Ranging and Synchronization between Satellite Pairs
See 0092
Clock Distribution Circuit for Active Aperture Antenna Array
See 0219
Laser Clock
See 0566

CLONING
Cloning and Expression of the Gene for Bacteriophage T7 RNA Polymerase
See 0901
Intact Gene and Method of Excising and Cloning Same
See 0915

CLOSURES
Remote Controlled Vacuum Joint Closure Mechanism
See 0155

CLUTCHES
Non-Backdriveable Free Wheeling Coupling
See 0675

COAL
Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
See 0491
Fluidized Bed Gasification of Extracted Coal
See 0388
Longwall Shearer Tracking System
See 0956
Physico-Chemical Fracturing and Cleaning of Coal
See 0397
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036
Shuttle Car Loading System
See 0965

COAL FINES
Drying of Pulverized Material with Heated Condensible Vapor
See 0523

COAL GASIFICATION
Fluidized Bed Gasification of Extracted Coal
See 0388
Improved Catalysts for Carbon and Coal Gasification
See 0389

COAL LIQUEFACTION
Method of Distributing Liquefaction Catalysts in Solid Carbonaceous Material
See 0395
Solvent Treatment of Coal for Improved Liquefaction
See 0401

COAL LIQUEFACTION PLANTS
Disc Valve for Sampling Erosive Process Streams
See 0521

COAL LIQUIDS
Disc Valve for Sampling Erosive Process Streams
See 0521

COAL MINES
Method for Controlled Burnout of Abandoned Coal Mines and Waste Banks
See 0416
Self-Actuating Vacuum Gas/Liquid Separator
See 0963

COAL WATER SLURRIES
Method of Burning Lightly Loaded Coal-Water Slurries
See 0394
Stabilizing Coal-Water Mixtures with Portland Cement
See 0402

COATING
Corrosion Resistant Coating
See 0800
Textured Carbon Surfaces on Copper
See 0770

COATINGS
Diamondlike Flakes
See 0758
Fluorination by Inorganic Fluorides in Glow Discharge
See 0760
Method for Melt-Coating a Surface
See 0713
Process for Producing Carbide Coatings
See 0767
Wet Film Applicator
See 0696

COAXIAL CABLES
Cable Stripping Apparatus
See 0658
Demountable Coaxial Electrical Connector for In-Line Amplifiers
See 0306
High Voltage RF Coaxial Cable
See 0367

COBALT
Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057
Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
See 0831

COBALT ALLOYS
Long Range Ordered Alloys Modified by Addition of Niobium and Cerium
See 0803

CODERS
Digital Raster Timing Encoder/Decoder
See 0095

CODING
Automatic Multi-Banking of Memory for Microprocessors
See 0120
Multi-Track Optical Shaft Position and Timing Cylinder
See 0979
Phase-Coded Pulse Expander-Compressor
See 0205
Secure Digital Speech Communication
See 0108

COHERENT RADAR
Bistatic Coherent Radar Receiving System
See 0189
Test Signal Generator for Coherent Air-to-Ground Radars
See 0216

COHERENT SCATTERING
Picosecond Broadband CARS (Coherent Antistokes Raman Spectroscopy) Probe Using the Picosecond Continuum
See 0608

COKING
Shale Oil Dearsenation Process
See 0399

COLCHICINE
Carbamates of Colchicine for Treatment of Gout
See 0046

COLCHICINE + DIDEMETHYL
Antiinflammatory 2,3-Didemethylcolchicine and Derivatives
See 0885

COLCHICINE + THIO
Carbamates of Colchicine for Treatment of Gout
See 0046

COLD PLATES
Cold Plate for Laboratory Use
See 0852

COLD STORAGE
Gas Hydrate Cool Storage System
See 0407

COLLECTING METHODS
Improved Method and Apparatus for the Mass Rearing of Fruit Flies
See 0561

COLLIMATORS
Diamond-Anvil High-Pressure Cell with Improved X-Ray Collimation System
See 0520

COLOR CENTERS
Polarimetric Image Recorder
See 0983

COLORS
Apparatus and Circuits for Two-Color Printing in Electronic Impact Printers
See 0976
Dot Matrix Color Printer
See 0977
Optically Controlled Multi-Color Impact Printer
See 0981

COLUMNS(SUPPORTS)
Wood Beam
See 0848

COMBUSTION
Azido Nitramino Ethers
See 0043
Heater Block Assembly for Use in Thermal Oxidation Testing of Jet Fuel
See 0551
Method of Burning Lightly Loaded Coal-Water Slurries
See 0394
Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
See 0396
System for Controlling the Oxygen Content of a Gas Produced by Combustion
See 0634

COMBUSTION CHAMBERS
System for Controlling the Oxygen Content of a Gas Produced by Combustion
See 0634

COMBUSTION PRODUCTS
System for Controlling the Oxygen Content of a Gas Produced by Combustion
See 0634

COMMERCIAL EQUIPMENT
High Voltage Disconnect Protection
See 0310

COMMUNICATION EQUIPMENT
ADCCP (Advanced Data Communication Control Procedure) Communication Processor
See 0091
Simultaneous Detection of Time Coincident Signals in an Adaptive Doppler Tracker
See 0109

COMMUNICATIONS NETWORKS
Communications Network Status Information System
See 0094
Survivable Local Area Network
See 0111

COMPARATORS
Comparator with Noise Suppression
See 0243

COMPASSES
Precise Bearing Support Ditherer with Piezoelectric Drive Means
See 0680

COMPENSATORS
Jinc-Trap Resonator
See 1007
Tracking Servo Compensator with Rate Aiding
See 0217

COMPOSITE MATERIALS
Biocompatible Cementitious Dental Compositions
See 0740
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0049
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0050
Composite Desiccant Structure
See 0774
Dispersion Toughened Ceramic Composites and Method for Making Same
See 0776
Hydrophobic Dental Composites Based on a Polyfluorinated Dental Resin
See 0910
Improved Process for the Preparation of Fiber-Reinforced Ceramic Composites by Chemical Vapor Deposition
See 0780
Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785
Silicon Carbide Whisker Reinforced Composites and Method for Making Same
See 0786

COMPOSITE STRUCTURES
Light Weight Fire Resistant Graphite Composites
See 0781

COMPUTER AIDED DESIGN
Routing Method in Computer Aided Customization of a Two Level Automated Universal Array
See 0284

COMPUTER APPLICATIONS
Battery Control and Fault Detection Method
See 0449

COMPUTER DESIGN
Automatic Multi-Banking of Memory for Microprocessors
See 0120

COMPUTER FILES
Variable Data Base Generator Apparatus
See 0136

COMPUTER GRAPHICS
Computer-Aided Process for Generating Camera-Ready Graphical Artwork
See 0121
Infrared System with Computerized Image Display
See 0172

COMPUTER NETWORKS
Multicomputer Communication System
See 0103

COMPUTER PROGRAMMING
Programmable Realtime Interface between a Block Floating Point Processor and Memory
See 0208

COMPUTER STORAGE DEVICES
Method of and Apparatus for Generating an Interstitial Point in a Data Stream Having an Even Number of Data Points
See 0130

CONCENTRATING COLLECTORS
Cable Tensioned Membrane Solar Collector Module with Variable Tension Control
See 0431

CONCENTRATORS
Nebulization Reflux Concentrator
See 0033

CONGENERS
Functionalized Congeners of Adenosine Receptor Agonists
See 0907

CONICAL SCANNING
Integrated Dual Beam Line Scanning Antenna and Negative Resistance Diode Oscillator
See 0227

CONNECTORS
Connection System
See 0139
Length Adjustable Strut Link with Low Aerodynamic Drag
See 0148
Releasable Cable Connector Assembly for Use between a Mobile and Stationary Object
See 0154
Vehicle-to-Vehicle Connection Mechanism
See 0160

CONTAINERLESS MELTS
Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662

CONTAINMENT
Hemispherical Latching Apparatus
See 0144

CONTAMINANTS
Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
See 0578

CONTINUOUS PROCESSING
Method for Continuously Casting
See 0712

CONTRABAND
Shielded Sniffing Device
See 0625

CONTRAST
Measurement of Visual Contrast Sensitivity
See 0922

CONTRAST MEDIA
Use of Paramagnetic Metalloporphyrins as Contrast Agents for Tumors in NMR Imaging
See 0881

CONTROL
Television Camera Video Level Control System
See 0113

CONTROL STICKS
Biodynamic Resistant Control Stick
See 1100

CONTROL SYSTEMS
Active Dispersion Control for a Doppler Broadened Laser
See 0988
Battery Control and Fault Detection Method
See 0449

CONTROL SYSTEMS DESIGN
Reactant Pressure Differential Control for Fuel Cell Gases
See 0475

CONTROLLERS
Three-Phase Power Factor Controller with Induced EMF Sensing
See 0313

CONVERTERS
IREB (Intense Relativistic Electron Beam) Converter to AC Pulses
See 0465
Single Optical Fiber Telephone System
See 0110

CONVEYORS
Shuttle Car Loading System
See 0965

CONVOLUTION
Digital High Speed Programmable Convolver
See 0124

CONVOLVERS
Digital High Speed Programmable Convolver
See 0124

COOLING
Heat Pipe Cooled Probe
See 0549

COOLING SYSTEMS
High Thermal Power Density Heat Transfer Apparatus Providing Electrical Isolation at High Temperature Using Heat Pipes
See 0412
Precision Manipulator Heating and Cooling Apparatus for Use in UHV (Ultrahigh Vacuum) Systems with Sample Transfer Capability
See 0681

COORDINATES

Vortex Generating Flow Passage Design for Increased Film Cooling Effectiveness
See 1098

COORDINATES

Generation and Display Apparatus
See 0126

COORDINATION COMPOUNDS

Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
See 0884

COPOLYMERIZATION

Chemical Control of Nadimide Cure Temperature and Rate
See 0818

High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

COPOLYMERS

Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446

Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0049

Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0050

Electrically Conductive Doped Block Copolymer of Polyacetylene and Polyisoprene
See 0820

Epoxy Phthalonitrile Polymers
See 0822

High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828

Polyactic-Polyglycolic Acid Copolymer Combined with Decalcified Freeze-Dried Bone for Use as a Bone Repair Material
See 0872

Synthesis of Arylene Siloxanylene Polymers and Copolymers
See 0084

COPPER

Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057

COPPER OXIDES

Textured Carbon Surfaces on Copper
See 0770

CORN

Production of Food-Grade Corn Germ Product by Supercritical Fluid Extraction
See 0019

CORRELATION

Double Pinhole Spatial Phase Correlator Apparatus
See 1036

CORROSION

High Resolution In situ Ultrasonic Corrosion Monitor
See 0553

CORROSION INHIBITION

Corrosion Inhibitor Formulation for Molybdenum, Tungsten and Other Metals
See 0799

Fluorinated Aliphatic Polyalkylether Lubricant with an Additive Composed of an Aromatic Phosphine Substituted with Perfluoroalkylether Groups
See 0839

Passivation of Steel with Aqueous Amine Solutions
See 0813

Rusty Bolt Intermodulation Interference Reducer
See 0816

CORROSION PREVENTION

Oxidation Protection Coatings for Polymers
See 0764

CORROSION RESISTANCE

Carbon Granule Probe Microphone for Leak Detection
See 0509

Corrosion Resistant Coating
See 0800

CORRUGATING

Curved Cap Corrugated Sheet
See 1102

COST EFFECTIVENESS

Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
See 0408

COTTON FABRICS

Mild-Cure Formaldehyde-Free Durable-Press Finishing of Cotton Textiles with Glyoxal and Glycols
See 0791

Process to Impart Smooth-Dry and Flame Retardant Properties to Synthetic-Cellulosic Blended Fabrics
See 0792

COULOMETERS

State-of-Charge Coulometer
See 0631

COUNTERCURRENT CHROMATOGRAPHY

Multi-Layer Coil Assembly Coaxially Mounted Around the Rotary Axis for Preparatory Countercurrent Chromatography
See 0595

COUNTERCURRENT SEPARATION

Multi-Layer Coil Countercurrent Chromatograph with Adjustable Revolutional Radius
See 0596

COUPLERS

Hardwire Missile Receiver Coupler
See 0225

Holographic Directional Coupler for Fiber Optic Systems
See 1046

Switching Mixer
See 0293

COUPLING

Coupling an Induction Motor Type Generator to AC Power Lines
See 0455

COUPLING(INTERACTION)

Coaxial Cavity Gunn Oscillator Using Probe Coupled Microstrip
See 0240

Dual Mode Directionally Coupled Band Reject Filter Apparatus
See 0249

COUPLINGS

Connection System
See 0139

Non-Backdriveable Free Wheeling Coupling
See 0675

Tube Coupling Device
See 0159

COVERINGS

Fire Blocking Systems for Aircraft Seat Cushions
See 1105

COYOTES

Method and Composition for Luring Coyotes
See 0923

CRACK PROPAGATION

Remote Optical Crack Sensing System
See 0617

CRACKS

Remote Optical Crack Sensing System
See 0617

CRATERING

System for Rapid Repair of Damaged Airfield Runways
See 0636

CREEP TESTS

Tensile Testing Apparatus
See 0637

CROSSED FIELD DEVICES

Rippled-Field Magnetron Apparatus
See 0383

CROSSLINKING

Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0047

Chemical Control of Nadimide Cure Temperature and Rate
See 0818

Thermoset-Thermoplastic Aromatic Polyamide Containing n-Propargyl Groups
See 0838

CROSSLINKING(CHEMISTRY)

Pseudo-P-1,2,2,9,9,10,10-Octo-Fluoro(2,2)-P-Cyclophane Bis-Acid Chloride
See 0078

CRYOGENIC REFRIGERATORS

Combined Cold Compressor/Ejector Helium Refrigerator
See 0404

Ten Degree Kelvin Hydride Refrigerator
See 0428

CRYSTAL DEFECTS

Method for Growing Low Defect, High Purity Crystalline Layers
See 1089

Method of Reducing Impurity and Antisite Defects in Semiconductor Crystal Materials, and Device and Apparatus Respectively Produced from and Utilizing Same
See 1094

CRYSTAL FILTERS

Normal Coordinate Monolithic Crystal Filter
See 0335

CRYSTAL GROWTH

Apparatus and Method for the Horizontal, Crucible-Free Growth of Silicon Sheet Crystals
See 1082

Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662

Heat Pipe and Method of making same
See 0409

Low Defect, High Purity Crystalline Layers Grown by Selective Deposition
See 1088

Method for Growing Low Defect, High Purity Crystalline Layers
See 1089

Method for Growth of Crystals by Pressure Reduction of Supercritical or Subcritical Solution
See 1090

Method for Synthesizing Indium Phosphide
See 1091

Process and Apparatus for Growing a Crystal Ribbon
See 0034

Total Immersion Crystal Growth
See 1097

CRYSTAL OSCILLATORS

Acceleration Insensitive Oscillator
See 0314

Acceleration Sensitivity Reduction Method
See 0316

Adjustment of the Frequency-Temperature Characteristics of Crystal Oscillators
See 0236

SAW Oscillator with Digital Compensation for the Temperature Related Frequency Changes
See 0286

Suppression of Vibration Effects on Piezoelectric Crystal Resonators.
See 0338

CRYSTALLINITY
Method for Growing Low Defect, High Purity Crystalline Layers
See 1089

CRYSTALLIZATION
Method of Preparing Single Crystalline Cubic Silicon Carbide Layers
See 1093
Total Immersion Crystal Growth
See 1097

CUBE PROCESSORS
Advanced Cube Processor
See 1029

CULTURE TECHNIQUES
Flow Through Bacteria Detection System
See 0856

CULTURES(BIOLOGY)
Blood Lysis and Culture System
See 0899
Cold Plate for Laboratory Use
See 0852

CURING
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0049
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0050
Chemical Control of Nadimide Cure Temperature and Rate
See 0818
Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828
Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057

CURRENT DENSITY
Coaxial Probe for Measuring the Current Density Profile of Intense Electron Beams
See 0512

CURRENT REGULATORS
High Output Programmable Signal Current Source for Low Output Impedance Applications
See 0260

CUSHIONS
Fire Blocking Systems for Aircraft Seat Cushions
See 1105

CUTTING TOOLS
Portable Cutting Apparatus
See 0678
Rotating Tool Wear Monitoring Apparatus
See 0684

CYCLIC COMPOUNDS
Method of Preparing Tetrahydrofuran
See 0061

CYCLIC HYDROCARBONS
Synthesis of 2,4,8,10-Tetroxaspiro5,5undecane
See 0086

CYCLOTRIPHOSPHAZENE + (VINYLOXY)CHLORO
(Vinyloxy)Chlorocyclotriphosphazenes
See 0040

CYLINDERS
Alignment and Assembly Tool for Very Large Diameter Cylinders
See 0654

CYLINDRICAL BODIES
Cylindrical Crystal Resonator
See 0321

CYTOCHEMISTRY
Improved Flow Cytometer Measurement of Binding Assays
See 0559

CYTOLOGY
Apparatus for Eliminating Background Interference in Fluorescence Measurements
See 0850

CZOCHRALSKI CRYSTALS
Telescoping Low Vibration Pulling Mechanism for Czochralski Crystal Growth
See 0688

DAMPING
Apparatus for Disintegrating Kidney Stones
See 0849
Arrangement for Damping the Resonance in a Laser Diode
See 0990
Damping Seal for Turbomachinery
See 0742

DATA ACQUISITION
Data Acquisition Channel Apparatus
See 0245
Data Collection System
See 0123
Optical Mark Reader
See 1063
Remote Self-Contained Undersea Monitor
See 0736

DATA DISPLAYS
Maintenance Port System
See 0129

DATA LINKS
Phanton Computer Gating System
See 0971

DATA PROCESSING
Adaptive Preprocessing System
See 0188
Improvements in Floating Point Addition/Subtraction Operations
See 0128
LDV(Lase Doppler Velocimeter) Multiplexer Interface
See 0100
Nonlinear Technique for High-Resolution Data Processing
See 0132
Real Time Data Smoother and Significant Values Selector
See 0134

DATA PROCESSING EQUIPMENT
Generation and Display Apparatus
See 0126
Maintenance Port System
See 0129
Releasable Cable Connector Assembly for Use between a Mobile and Stationary Object
See 0154

DATA TRANSMISSION
Hardward Interpreter for Finite State Automata
See 0098
Optical Analog Data Link with Simple Self-Test Feature
See 0104

DATA TRANSMISSION SYSTEMS
Metallized Synthetic Cable
See 0372
Multiplexed Data Stream Monitor
See 0131
Optical Non-Line-of-Sight Covert, Secure High Data Communication System
See 0105

DECANOIC ACID + BUTYL-METHYL
Bagworm Moth Attractant and Plant Protectant
See 0044

DECODERS
Digital Raster Timing Encoder/Decoder
See 0095
Pulse Compression System
See 0106
Reed-Solomon Decoder
See 0107

DEFECTS(MATERIALS)
Liquid Crystal Non-Destructive Inspection of Metals
See 0570

DEICERS
Electro-Expulsive Separation System
See 1103
Piezoelectric Deicing Device
See 1112

DELAY CIRCUITS
Programmable Synchronous Digital Delay Line
See 0279

DELAY LINES
Improved Magnetic Bias and Delay Linearity in a Magnetostatic Wave Delay Line
See 0325
Magnetostatic Wave Frequency Analyzer Apparatus
See 0575
Precision Digital Sampler
See 0277
Programmable Synchronous Digital Delay Line
See 0279
Signal Analysis Receiver with Acousto-Optic Delay Lines
See 0288

DENTAL MATERIALS
Biocompatible Cementitious Dental Compositions
See 0740
Hydrophobic Dental Composites Based on a Polyfluorinated Dental Resin
See 0910
Non-Aqueous Dental Cements Based on Dimer and Trimer Acids
See 0748

DEOXYRIBONUCLEIC ACIDS
Deoxyribonucleic Acid Molecules Useful as Probes for Detecting Deleterious Genes Incorporated into Chromosomal DNA
See 0903
Method for Rapid DNA (Deoxyribonucleic Acid) Sequencing
See 0925
Process for Site-Specific Mutagenesis without Phenotypic Selection
See 0939

DEPLOYABLE FOLDED ANTENNA APPARATUS
Deployable Folded Antenna Apparatus
See 0221

DEPOSITION
Deposition of Diamondlike Carbon Films
See 0757

DEPOSITS
Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
See 0496

DESICCANTS
Composite Desiccant Structure
See 0774
Rigid Zeolite Containing Polyurethane Foams
See 0835

DETECTION
Dual Differential Interferometer
See 0525
Focal Plane Array Optical Proximity Sensor
See 1042
Technique for Rapid Determination of Probability of Detection in Pulse Doppler Radars
See 0215

DETECTORS
Biological Sensor for the Detection of Toxicants
See 0505
External Cavity Diode Laser Sensor
See 0534

DEWAR FLASKS

Improved Chemical Sensor Matrix
See 0558

Method and Apparatus for the Detection of Toxicants
See 0584

Nondestructive Noncontact Device to Characterize Semiconductor Material
See 0600

Survivable Ground Base Sensor
See 0214

Three-Stage Binary Coincidence Detector Apparatus with Adaptive Constant False Alarm Rate
See 0114

DEWAR FLASKS

Transmissive Dewar Cooling Chamber for Optically Pumped Semiconductor Ring Lasers
See 1024

DIABROTICA

Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

DIAGNOSIS

Sensitive and Rapid Diagnosis of Viroid Diseases and Viruses
See 0946

DIAGNOSTIC AGENTS

Competitive ELISA (Enzyme-Linked Immunosorbent Assay) for the Detection of Antibodies
See 0902

Diagnostic Reagent for Swine Trichinosis
See 0005

DIAGNOSTIC EQUIPMENT

Medical Apparatus
See 0865

DIAMINES

Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824

Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766

DIAMONDS

Apparatus for Producing Diamond-Like Carbon Flakes
See 0755

Diamondlike Flakes
See 0758

DIAPHRAGMS(MECHANICS)

Variable Friction Secondary Seal for Face Seals
See 0754

DIATHERMY

Helical Coil for Diathermy Apparatus
See 0859

DIE CASTING

Method for Continuously Casting
See 0712

DIELECTRIC PROPERTIES

Measurement of Permittivity and Permeability of Microwave Materials
See 0576

Method for the Fabrication of Dielectric Isolated Junction Field Effect Transistor and PNP Transistor
See 0714

DIELECTRIC WAVEGUIDES

Amplitude and Phase Modulation in Fin-Lines Electrical Tuning
See 0355

DIELECTRICS

Dielectric Resonator
See 0322

Process of Synthesizing Mixed BaO-TiO2 Based Powders for Ceramic Applications
See 0336

DIELS-ALDER REACTIONS

Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0048

DIESEL FUELS

Microemulsions from Vegetable Oil and Lower Alcohol with Octanol Surfactant as Alternative Fuel for Diesel Engines
See 0396

DIFFERENCES

Retinally Stabilized Differential Resolution Television Display
See 0181

DIFFERENTIAL AMPLIFIERS

Measurement Amplifier
See 0268

DIFFRACTION

Unstable Optical Resonator with Cancelling Edge Waves
See 1079

DIFFRACTION DIFFUSION SCREENS

Diffraction Diffusion Screen with Holographically-Suppressed Zero-Order Beam
See 1035

DIFFUSERS

Diffraction Diffusion Screen with Holographically-Suppressed Zero-Order Beam
See 1035

DIFFUSIVITY

Diffusely Reflecting Paints Including Polytetrafluoroethylene and Method of Manufacture
See 0759

DIGITAL COMMUNICATIONS

Secure Digital Speech Communication
See 0108

DIGITAL COMPUTERS

Multicomputer Communication System
See 0103

Variable Radix Processor
See 0137

DIGITAL DIFFERENTIAL ANALYZERS

Orthogonalizer for Inphase and Quadrature Digital Data
See 0274

DIGITAL RECORDING SYSTEMS

Extracting Digital Data from a Bus and Multiplexing It with a Video Signal
See 0978

DIGITAL SYSTEMS

Digital Raster Timing Encoder/Decoder
See 0095

Programmable Synchronous Digital Delay Line
See 0279

Tone Calibrated Digital Radio Communication System
See 0115

Transdigitizer for Relaying Signals from Global Positioning System (GPS) Satellites
See 0974

DIGITAL TO ANALOG CONVERTERS

Method and Apparatus for Operating on Companded PCM (Pulse Code Modulation) Voice Data
See 0102

DIGITONINS

Saponin-Based Polyether Polyols
See 0894

DIODES

Arrangement for Damping the Resonance in a Laser Diode
See 0990

Interdigital Schottky Barrier Capacitor Apparatus
See 0326

DIOLEFIN

Novel Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0932

DIPTERA

Quarantine System for Papaya
See 0943

DIRECT POWER GENERATORS

Bi-Directional Control System for Energy Flow in a Solar Powered Flywheel
See 0450

DIRECTIONAL ANTENNAS

Dual Band, Low Sidelobe, High Efficiency Mirror Antenna
See 0222

Low Sidelobe, High Efficiency Mirror Antenna with Twist Reflector
See 0229

Radio Frequency Lens Antenna
See 0233

DISCONNECT DEVICES

Slide Release Mechanism
See 0157

DISCONNECT FITTINGS

High Voltage Disconnect Protection
See 0310

DISKS

Stress Compensation Crystal Device
See 0337

DISPENSERS

Nonabsorbent Roller Applicator
See 0931

DISPERSION RELATIONS

Improved Magnetic Bias and Delay Linearity in a Magnetostatic Wave Delay Line
See 0325

Magnetostatic Wave Frequency Analyzer Apparatus
See 0575

DISPLAY DEVICES

Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

Retinally Stabilized Differential Resolution Television Display
See 0181

DISPLAY SYSTEMS

Electrochromic Display Device
See 0362

DISTILLATION

Method and Apparatus for Sequential Fractionation
See 0583

DISTILLATION EQUIPMENT

Method and Apparatus for Sequential Fractionation
See 0583

DISTORTION

Method of Measuring Spherical Aberration and Apparatus Therefor
See 1057

DITHERING

Precise Bearing Support Ditherer
See 0679

Precise Bearing Support Ditherer with Piezoelectric Drive Means
See 0680

DOPED CRYSTALS

FET Charge Sensor and Voltage Probe
See 0539

DOPES

Lithium Counterdoped Silicon Solar Cell
See 0433

DOPING

Simultaneous Doped Layers for Semiconductor Devices
See 1022

DOPPLER EFFECT
Vibration-Free Raman Doppler Velocimeter
See 0651

DOPPLER RADAR
Adaptive Mutual Interference Suppression Method
See 0187
Gain Restoration after Doppler Filtering
See 0195
Phase-Coded Pulse Expander-Compressor
See 0205
Technique for Rapid Determination of Probability of Detection in Pulse Doppler Radars
See 0215
Test Signal Generator for Coherent Air-to-Ground Radars
See 0216

DOPPLER SYSTEMS
Sample Data Phase Locked Loop for Adaptive Doppler Tracker
See 0285

DOSAGE
Ultrasonic Therapy Applicator That Measures Dosage
See 0880

DOSIMETERS
Vibration Dosimeter
See 0882

DOT MATRIX PRINTERS
Apparatus and Circuits for Two-Color Printing in Electronic Impact Printers
See 0976
Dot Matrix Color Printer
See 0977
Optically Controlled Multi-Color Impact Printer
See 0981
Positioning of a Multicolor Ribbon
See 0984
Printing Apparatus
See 0985
Serial Impact Printer for Multicolor Printing
See 0986

DOWN CONVERTERS
Optical RF Downconverter
See 1064

DRAG CHUTES
Extended Moment Arm Anti-Spin Device
See 1104

DRAG REDUCTION
Combined Riblet and Lebu Drag Reduction System
See 0727

DRILLING
Drill Guide for Bone Plate Fixation
See 0853

DRIVE SHAFTS
Compact Brake Structure
See 0660

DRIVES(ELECTRONICS)
Energizing Arrangement for Charge Coupled Device Control Electrodes
See 0253
Fast Switching Driver for Inductive Load, Such as a Phase Shifter
See 0194

DROPSONDES
Real Time Data Smoother and Significant Values Selector
See 0134

DRUGS
Antiinflammatory 2,3-Didemethylcolchicine and Derivatives
See 0885
Biologically-Active Xanthine Derivatives
See 0045
Chelating Agents for the Treatment of Iron Overload
See 0886
Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056
New Antineoplastic Platinum (IV) Complexes
See 0063
Purification of Uromodulin
See 0893
Saponin-Based Polyether Polyols
See 0894
Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083
2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
See 0896

DRYDOCKS
Original Method of Drydocking Ships
See 0735

DRYING
Microwave Drying of Ammonium Perchlorate Grinding Spheres
See 0718

DRYING APPARATUS
Microwave Drying of Ammonium Perchlorate Grinding Spheres
See 0718

DUPLEXERS
Interactive Communication Channel
See 0099

DURABLE PRESS TREATING
Mild-Cure Formaldehyde-Free Durable-Press Finishing of Cotton Textiles with Glyoxal and Glycols
See 0791
Process to Impart Smooth-Dry and Flame Retardant Properties to Synthetic-Cellulosic Blended Fabrics
See 0792
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0793
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0794

DYE LASERS
Fiber Optics Interface for a Dye Laser Oscillator and Method
See 0999
Optically Pumped Iodine Monofluoride Laser
See 1014

EDDY CURRENTS
Eddy Current Test Probe with Circumferential Segments and Method of Testing Material Surrounding Fastener Holes
See 0529

EJECTION SEATS
Air Bag Restraint System
See 1116
Passive Arm Retention Curtain
See 1111
Windblast Arm Protector Assembly
See 1121

ELASTOMERS
Elastomer Toughened Polyimide Adhesives
See 0743
Electro-Expulsive Separation System
See 1103

ELBOW(ANATOMY)
Elbow and Knee Joint for Hard Space Suits and the Like
See 0854

ELECTRIC ARCS
Apparatus for Producing Diamond-Like Carbon Flakes
See 0755

ELECTRIC BATTERIES
Aluminum Battery Alloys
See 0797
Charge Depletion Meter
See 0510
Nickel-Cadmium Battery Conditioner and Tester Apparatus
See 0471
Polyethylene Imine-Metal Salt Solid Electrolyte
See 0474
State-of-Charge Coulometer
See 0631

ELECTRIC BRIDGES
Electrolytic Pressure Transduction System
See 0855

ELECTRIC CABLES
Demountable Coaxial Electrical Connector for In-Line Amplifiers
See 0306
Heat Resistant Sheathed Insulated Electrical Conductors
See 0366
Sampled Towed Array Telemetry
See 0165

ELECTRIC CHARGE
Charge Depletion Meter
See 0510

ELECTRIC COILS
Phase Sensitive Guidance Sensor for Wire-Following Vehicles
See 0972

ELECTRIC CONDUCTIVITY
Electrically Conductive Doped Block Copolymer of Polyacetylene and Polyisoprene
See 0820

ELECTRIC CONDUCTORS
Heat Resistant Sheathed Insulated Electrical Conductors
See 0366
Mechanical Locking between Multi-Layer Printed Wiring Board Conductors and Through-Hole Plating
See 0269

ELECTRIC CONNECTORS
Connector/Nitinol delta Contact Force Device
See 0305
Demountable Coaxial Electrical Connector for In-Line Amplifiers
See 0306
Multi-Row Connector with Ground Plane Board
See 0311

ELECTRIC CONTACTS
Coaxial Test Fixture
See 0360
Screen Printed Interdigitated Back Contact Solar Cell
See 0439

ELECTRIC CONTROL
Adjustable Indicating Device for Load Position
See 0493

ELECTRIC CURRENT
Coaxial Probe for Measuring the Current Density Profile of Intense Electron Beams
See 0512
Electro-Expulsive Separation System
See 1103
Trace Water Sensor
See 0643

ELECTRIC FIELDS
Fiber Optic System for Measuring Electric Fields
See 0542

ELECTRIC FILTERS
EMI (Electromagnetic Interference) Filter Capacitor Unit
See 0252

READEX best copy available

ELECTRIC GENERATORS

Length Dependent, Optical Time Delay/Filter Device for Electrical Signals
See 0370

ELECTRIC GENERATORS

Solar Powered Actuator with Continuously Variable Auxiliary Power Control
See 0441

ELECTRIC HEATING

Feedback Regulated Induction Heater for a Flowing Fluid
See 0406

ELECTRIC MOTORS

Brush and Commutator Segment Torquer Motor
See 0303

ELECTRIC POTENTIAL

Angular Measurement System
See 0494

High Voltage Power Supply
See 0262

Modulated Voltage Metastable Ionization Detector
See 0593

New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434

Simplified DC to DC Converter
See 0289

ELECTRIC POWER PRODUCTION

Dual Electrochemical System
See 0456

ELECTRIC POWER SUPPLIES

High Voltage Power Supply
See 0262

ELECTRIC SWITCHES

High Voltage Disconnect Protection
See 0310

Switch Debounce Circuit
See 0292

ELECTRIC WIRE

Hardwire Missile Receiver Coupler
See 0225

Liquid Thickness Gage
See 0573

ELECTRICAL CONDUCTIVITY

Processable and Stable Conductive Polymers
See 0633

ELECTRICAL INSULATION

Cable Stripping Apparatus
See 0658

Moisture Absorbing Anti-Arcing Coating and Method For Applying Same
See 0762

ELECTRICAL LASERS

New Free Electron Laser Using a Relativistic Beam with Spiralling Electron
See 1013

RF Laser Array Driver Apparatus
See 1020

Rippled-Field Magnetron Apparatus
See 0383

ELECTRICAL RESISTANCE

Tensile Testing Apparatus
See 0637

ELECTRICAL RESISTIVITY

Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

ELECTROACOUSTIC TRANSDUCERS

Lightweight, Broadband Rayleigh Wave Transducer
See 0327

Method and Apparatus for Detecting Acoustic Emissions from Metal Matrix Wire
See 0577

ELECTROCHEMICAL CELLS

Electrochemical Methane Sensor
See 0530

Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586

ELECTROCHEMICAL OXIDATION

Epitaxial Thinning Process
See 0702

ELECTROCHEMISTRY

Dual Electrochemical System
See 0456

ELECTRODES

Conductor-Polymer Composite Electrode Materials
See 0775

Electrolyte Reservoir for Carbonate Fuel Cells
See 0457

Energizing Arrangement for Charge Coupled Device Control Electrodes
See 0253

Fuel Cell Electrode and Method of Preparation
See 0459

Method of Preparing Thin Porous Sheets of Ceramic Material
See 0845

Microwave Resonator Using Lateral Excitation
See 0332

Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470

Suspension Method of Impregnating Active Material into Composite Nickel Plaque
See 0787

Trace Water Sensor
See 0643

ELECTROLESS PLATING

Low Temperature Deposition of Nickel Films
See 0709

ELECTROLYTES

Rechargeable Lithium Cell
See 0476

Trace Water Sensor
See 0643

ELECTROLYTIC CELLS

Electrolytic Cell
See 0531

Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

State-of-Charge Coulometer
See 0631

ELECTROMAGNETIC FIELDS

Automated Calibration Technique for Non-Field Perturbing (Electrically Small) Electromagnetic Field Sensors
See 0503

ELECTROMAGNETIC INTERFERENCE

EMI (Electromagnetic Interference) Filter Capacitor Unit
See 0252

ELECTROMAGNETISM

Linear Magnetic Bearings
See 0670

ELECTROMECHANICAL DEVICES

Electro-Expulsive Separation System
See 1103

Electromechanical Switch
See 0307

ELECTROMECHANICAL SWITCHES

Electromechanical Switch
See 0307

ELECTROMOTIVE FORCES

Three-Phase Power Factor Controller with Induced EMF Sensing
See 0313

ELECTRON BEAMS

Coaxial Probe for Measuring the Current Density Profile of Intense Electron Beams
See 0512

New Free Electron Laser Using a Relativistic Beam with Spiralling Electron
See 1013

Quasi-Optical Harmonic Gyrotron and Gyroklystron
See 0381

Quasioptical Gyroklystron
See 0382

Short Rise Time Intense Electron Beam Generator
See 0287

ELECTRON EMISSION

Method for Predicting the Performance of Cathode Materials
See 0329

Textured Carbon Surfaces on Copper
See 0770

ELECTRON GUNS

High Efficiency Electron Beam Gun Foil Support
See 0323

Induction Heating Gun
See 0414

Self-Contained Hot-Hollow Cathode Gun Source Assembly
See 0384

ELECTRON TUBES

Atomically Mixed Alloy Coated Cathodes Specification
See 0356

P-N Junction Controlled Field Emitter Array Cathode
See 0378

ELECTRON TUNNELING

Inelastic Tunnel Diodes
See 0341

ELECTRONIC COMBINERS

Combined Microwave Parallel Amplifier-RF Attenuator/Modulator
See 0242

ELECTRONIC CONTROL

Closed Loop Electrostatic Levitation System
See 0304

ELECTRONIC COUNTERMEASURES

ECM Multiple-Target Retrodirective Antenna
See 0224

ELECTRONIC EQUIPMENT

Moisture Content and Gas Sampling Device
See 0594

Nonsaturable Microdryer
See 0421

ELECTRONIC SCANNERS

Scanning Alarm Electronic Processor
See 0623

ELECTRONIC SWITCHES

Heterojunction Schottky Gate Mesfet with Lower Channel Ridge Barrier
See 0340

Power Circuit Utilizing Self-Excited Hall Effect Switch Means
See 0276

ELECTROOPTICS

Advanced Cube Processor
See 1029

Charge Isolation in a Spatial Light Modulator
See 1032

Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040

Extended Precision in Video Bandwidth Analog to Digital Converter Using Optical Techniques
See 0364

Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
See 1047

Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
See 1054

Miniature Electrooptical Air Flow Sensor
See 0591

Optoelectronic Integrated Circuit Multiplier
See 1066

Photorefractor Ocular Screening System
See 0871

Wavelength Selective Demultiplexer Tuner
See 0300

ELECTROPHORESIS

Isoelectric Focussing-Polynucleotide/Polyacrylamide Gel Electrophoresis
See 0917

ELECTROPLATING

Process and Bath for Electroplating Nickel-Chromium Alloys
See 0722

ELECTROSTATIC GENERATORS

Closed Loop Electrostatic Levitation System
See 0304

ELECTROSTATIC SHIELDING

High Voltage Isolation Transformer
See 0324

ELEVATORS(LIFTS)

Elevator/Hatch Controller Platform Leveling Logic with Safety Features
See 0730

EMERGENCY LOCATOR TRANSMITTERS

Improved Legislated Emergency Locating Transmitters and Emergency Position Indicating Radio Beacons
See 1117

EMISSION SPECTROSCOPY

Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
See 0495

Low-Pressure Water-Cooled Inductively Coupled Plasma Torch
See 0574

EMITTERS

P-N Junction Controlled Field Emitter Array Cathode
See 0378

EMULSIFICATION

Method of Making Stable Emulsified Meat Products
See 0014

EMULSIONS

Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
See 0015

ENCAPSULATING

Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

ENCLOSURES

Moisture Content and Gas Sampling Device
See 0594

END EFFECTORS

Double Pinch-Push Contact Insertion End-Effector
See 0663

ENDOTHELIAL CELLS

Isolation and Culture of Adrenal Medullary Endothelial Cells Producing Blood Clotting Factor VIII: C
See 0919

ENERGY CONVERSION

Dual Electrochemical System
See 0456

ENERGY CONVERSION EFFICIENCY

Bi-Directional Control System for Energy Flow in a Solar Powered Flywheel
See 0450

New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434

Stable Density Stratification Solar Pond
See 0443

ENERGY STORAGE

Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470

ENKEPHALINS

Dimeric Enkephalins
See 0887

ENTHALPY

Device and Method for Measuring the Energy Content of Hot and Humid Air Streams
See 0518

ENZYMES

Isoelectric Focussing-Polynucleotide/Polyacrylamide Gel Electrophoresis
See 0917

EPITAXIAL GROWTH

Liquid Phase Epitaxy (LPE) of Silicon Carbide
See 1086

Liquid-Phase Epitaxial Growth of CdTe on HgCdTe
See 1087

LPE (Liquid Phase Epitaxy) Semiconductor Material Transfer Method
See 0710

Method for the Deposition of High-Quality Crystal Epitaxial Films of Iron
See 1092

Method for the Preparation of Epitaxial Films of Mercury Cadmium Telluride
See 0175

Process for Improving the Quality of Epitaxial Silicon Films Grown on Insulating Substrates
See 0723

Process for the Epitaxial Deposition of III-V Compounds Utilizing a Binary Alloy as the Metallic Source
See 1095

Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch
See 0035

EPITAXY

Epitaxial Thinning Process
See 0702

Low Stress Semiconductor-Insulator Interface for Cryogenic Device Applications
See 0342

EPOXY RESINS

Epoxy Phthalonitrile Polymers
See 0822

Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828

Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057

Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
See 0831

Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785

EQUIPMENT

Automatic Hide Processing Apparatus
See 0657

Method and Apparatus to Control Soil Moisture Matric Potential
See 0008

EQUIPMENT PROTECTION DEVICES

Fast Shutter Apparatus
See 0665

EROSION RESISTANCE

Erosion-Resistant Nosetip Construction
See 0777

Erosion-Resistant Nosetip Construction
See 0778

ERROR CORRECTING CODES

Reed-Solomon Decoder
See 0107

ERROR SIGNALS

Comparator with Noise Suppression
See 0243

ERYTHROCYTES

Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

New Method for the Selective Labeling of Erythrocytes in Whole Blood with Tc-99M
See 0930

ETHANOLS

Recovery of Alcohol from a Fermentation Source by Separation Rather Than Distillation
See 0080

ETHERS

Method of Preparing Tetrahydrofuran
See 0061

ETHYL ALCOHOL

Process for Enhanced Fermentation of Xylose to Ethanol
See 0937

ETHYLENE

Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

ETHYLENE DIAMINE DINITRATE

Preparation of Ethylenediamine Dinitrate
See 0073

EUKARYOTIC CELLS

Adeno-Associated Virus as Eukaryotic Expression Vector
See 0898

EVAPORATORS

Multi-Leg Heat Pipe Evaporator
See 0418

EXCIMER LASERS

Visible and Ultraviolet Lasers Based on Excimer Transitions in the Homonuclear Halogens
See 1026

EXHAUST GASES

Opacity Control Technique for Jet Engine Test Cells
See 0602

EXPENDABLE BATHYTHERMOGRAPHS

Test Device for Expendable Bathythermograph Set (XBT)
See 0638

EXPLOSIONS

Remote Sequential Gas Sampler for Blasting Areas
See 0618

EXPLOSIVE TRAINS

Detonation Transfer Evaluation Technique
See 0517

EXPLOSIVES

Recrystallization of Hexanitrostilbene from Dimethylsulfoxide and Methanol
See 0081

EXPULSION

Electro-Expulsive Separation System
See 1103

EXTENSOMETERS

Tensile Testing Apparatus
See 0637

EXTERNAL STORE SEPARATION

Remote Pivot Decoupler Pylon: Wing/Store Suppression
See 1113

Slide Release Mechanism
See 0157

EXTERNAL TANKS

Slide Release Mechanism
See 0157

EXTRACTION
Production of Food-Grade Corn Germ Product by Supercritical Fluid Extraction
See 0019
Saponin-Based Polyether Polyols
See 0894

EYE DISEASES
Photorefractor Ocular Screening System
See 0871

FABRICATION
Method for the Fabrication of Dielectric Isolated Junction Field Effect Transistor and PNP Transistor
See 0714
Titanium Metal-Matrix Composites
See 0788

FABRICS
Hot Melt Adhesive Attachment Pad
See 0745

FADING(ELECTROMAGNETIC WAVES)
Technique for the Reduction of Fading in Interferometers
See 1071

FARM CROPS
Control of Eastern Black Nightshade with a Fungal Pathogen
See 0003
Control of Mycotoxin Production by Chemically Inhibiting Fungal Growth
See 0004
Rope Wick Applicator
See 0022
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

FAST FOURIER TRANSFORMATIONS
Pipelined Digital SAR Azimuth Correlator Using Hybrid FFT-Transversal Filter
See 0207

FASTENERS
Daze Fasteners
See 0140
Mechanical Fastener
See 0150
Stud Hardware with Self-Contained Stud Anti-Rotation Feature and Method of Installing Studs
See 0158

FAT ANALYSIS
Spectrophotometric Method for Simultaneously Analyzing Protein and Fat Contents in Milk
See 0024

FATTY ACIDS
Polyunsaturated Fatty Acids from Fish Oils
See 0017

FEED SYSTEMS
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413

FEEDBACK CONTROL
Closed Loop Electrostatic Levitation System
See 0304
Three-Phase Power Factor Controller with Induced EMF Sensing
See 0313

FERMENTATION
Process for Enhanced Fermentation of Xylose to Ethanol
See 0937

FERRITES
High Switching Speed Electrically Tuned Microwave Magnetic Resonance Devices
See 0261

FERROMAGNETIC RESONANCE
Ferromagnetic Resonance Probe Liftoff Suppression Apparatus
See 0538

FERTILIZERS
Granulation of Urea Phosphate from Urea and Merchant-Grade Phosphoric Acid
See 0007
Production of High-Analysis Ammonium Orthophosphate Suspension Fertilizers by a New Batch-Type Process
See 0020

FIBER COMPOSITES
Arc Spray Fabrication of Metal Matrix Composite Monotape
See 0772
Light Weight Fire Resistant Graphite Composites
See 0781
Systems for Monitoring Changes in Elastic Stiffness in Composite Materials
See 0635

FIBER OPTICS
Fiber Optic Gyroscope with Alternating Output Signal
See 0969
Fiber Optic Sensors Operating at DC
See 0541
Fiber Optic System for Measuring Electric Fields
See 0542
Fiber Optics as an Angular Sensor
See 0543
Low Loss Splicing Method for Single-Mode Optical Fiber
See 1053
Method of Making an Undersea, High Pressure Bulkhead Penetrator for Use with Fiber Optic Cables
See 0734
Optical Fiber Coupling Method and Apparatus
See 1061
Optical Fibers with Reduced Pressure Sensitivity to High Frequency Acoustic Field
See 1062
Optical Sensing Devices
See 0178
Phase-Lock Fiber Optic Interferometer
See 0607
Single Optical Fiber Telephone System
See 0110
Temperature-Insensitive Optical Fibers
See 1073
Wavelength Multiplexer-Demultiplexer
See 0117

FIBER OPTICS TRANSMISSION LINES
Device for Controlling Optical Fiber Twist on a Bobbin
See 1033
Holographic Directional Coupler for Fiber Optic Systems
See 1046
Method of Making an Undersea, High Pressure Bulkhead Penetrator for Use with Fiber Optic Cables
See 0734

FIBER REINFORCED COMPOSITES
BN (Boron Nitrates) Coating of Ceramic Fibers for Ceramic Fiber Composites
See 0756
Curved Cap Corrugated Sheet
See 1102
System for Rapid Repair of Damaged Airfield Runways
See 0836

FIBERS
Metallized Synthetic Cable
See 0372
Temperature Adaptable Textile Fibers and Method of Preparing Same
See 0795

FIELD EFFECT TRANSISTORS
Dual-Gate MESFET Variable Gain Constant Output Power Amplifier
See 0250
FET Charge Sensor and Voltage Probe
See 0539
Field-Effect Transistor Having a Superlattice Channel and High Carrier Velocities at High Applied Fields
See 0339
Heterojunction Schottky Gate Mesfet with Lower Channel Ridge Barrier
See 0340
Modulation Doped GaAs/AlGaAs Field Effect Transistor
See 0345
Optical Injection Locking of Solid-State Oscillators by Frequency-Multiplexed Injection-Locked, Laser Diodes
See 0377
Process for Making a Heterojunction Source-Drain Insulated Gate Field-Effect Transistors Utilizing Diffusion to Form the Lattice
See 0724
Radiation Hardened Ion-Implanted GaAs Field Effect Transistor and Method for Making the Same Specification
See 0350
Self-Aligned GaAs FET with Low 1/f Noise
See 0352
Transistor Oscillator/Doubler
See 0297

FIELD EMISSION
Apparatus for Mounting a Field Emission Cathode
See 0318

FIELD OF VIEW
Focal Plane Array Optical Proximity Sensor
See 1042

FILAMENT WOUND CONSTRUCTION
Compartmented, Filament Wound, One-Piece Aircraft Fuel Tanks
See 1101

FILM COOLING
Improved Temperature Detection System for Use on Film Cooled Turbine Airfoils
See 0562
Vortex Generating Flow Passage Design for Increased Film Cooling Effectiveness
See 1098

FILM THICKNESS
Epitaxial Thinning Process
See 0702

FILMS
Wet Film Applicator
See 0696

FINS
Current Stabiiized Underwater Platform
See 0728

FIRE PREVENTION
Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyi)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824

FIRE RESISTANT MATERIALS
(Vinyloxy)Chlorocyclotriphosphazenes
See 0040
Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824
Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055

FIRE RESISTANT TEXTILES
Process to Impart Smooth-Dry and Flame Retardant Properties to Synthetic-Cellulosic Blended Fabrics
See 0792

FISH OILS
Polyunsaturated Fatty Acids from Fish Oils
See 0017

FISHES
Polyunsaturated Fatty Acids from Fish Oils
See 0017

FITTINGS
Tube Coupling Device
See 0159

FIXED CAPACITORS
EMI (Electromagnetic Interference) Filter Capacitor Unit
See 0252

FLAME RETARDANTS
Fire Blocking Systems for Aircraft Seat Cushions
See 1105

FLAMMABILITY
Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055
Light Weight Fire Resistant Graphite Composites
See 0781

FLASH TUBES
Switching Power Supply
See 0294

FLASKS
Dynamic Pressure Test Unit-Ratio Method
See 0527

FLAT CABLES
Multiconductor Flat Cable
See 0375

FLEXIBLE COUPLINGS
Flexible Line Support Assembly
See 0142

FLEXIBLE LINES
Flexible Line Support Assembly
See 0142

FLEXIBLE STRUCTURES
Flexible Line Support Assembly
See 0142

FLIGHT CONTROL SYSTEMS
Biodynamic Resistant Control Stick
See 1100
Translating Rudder Pedal System
See 1115

FLOW CHAMBERS
Fluidic Angular Velocity Sensor
See 0545

FLOW DIRECTION INDICATORS
Miniature Electrooptical Air Flow Sensor
See 0591

FLOW MEASUREMENT
Acoustic Scintillation Liquid Flow Measurement
See 0492
Miniature Electrooptical Air Flow Sensor
See 0591
Vibration-Free Raman Doppler Velocimeter
See 0651

FLOW REGULATORS
Combined Riblet and Lebu Drag Reduction System
See 0727

FLOW VELOCITY
Improved Fluid Flow Meter for Measuring the Rate of Fluid Flow in a Conduit
See 0560

FLOW VISUALIZATION
Continuous Laminar Smoke Generator
See 0514

FLOWMETERS
Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
See 0491
Flow Measurement Device
See 0544
Improved Fluid Flow Meter for Measuring the Rate of Fluid Flow in a Conduit
See 0560
Miniature Electrooptical Air Flow Sensor
See 0591
State-of-Charge Coulometer
See 0631

FLUE GAS
Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
See 0398

FLUID FLOW
Improved Fluid Flow Meter for Measuring the Rate of Fluid Flow in a Conduit
See 0560
Two-Axis, Self-Nulling Skin Friction Balance
See 0647

FLUID PRESSURE
Damping Seal for Turbomachinery
See 0742

FLUIDIZED BED
Fluidized Bed Gasification of Extracted Coal
See 0388

FLUIDS
Thermochemical Energy Transport Using a Hydrogen Rich Working Fluid
See 0483

FLUORESCENCE SPECTROSCOPY
Apparatus for Eliminating Background Interference in Fluorescence Measurements
See 0850

FLUORINATED DIACRYCLIC ESTERS
Fluorinated Diacrylic Esters
See 0744

FLUORINATED HYDROCARBONS
Pentafluorotelluriumoxide Fluorocarbons
See 0064

FLUORINATION
Fluorination by Inorganic Fluorides in Glow Discharge
See 0760
Method for Introducing Fluorine into an Aromatic Ring
See 0059

FLUORINE LASERS
Vacuum Ultraviolet Laser
See 1025

FLUORINE ORGANIC COMPOUNDS
Hydrophobic Dental Composites Based on a Polyfluorinated Dental Resin
See 0910

FLUOROPOLYMERS
Fluorinated Aliphatic Polyalkylether Lubricant with an Additive Composed of an Aromatic Phosphine Substituted with Perfluoroalkylether Groups
See 0839
Fluorinated Diacrylic Esters
See 0744
Fluorinated Polyesters
See 0826
Fluorinated Polyurethanes
See 0827

FLUOSILICIC ACID
Production of Lead from Sulfides
See 0961

FLUTTER
Remote Pivot Decoupler Pylon: Wing/Store Suppression
See 1113

FLUTTER ANALYSIS
Model Mount System for Testing Flutter
See 0592

FLYWHEELS
Bi-Directional Control System for Energy Flow in a Solar Powered Flywheel
See 0450

FOAMS
Impacting Device for Testing Insulation
See 0557
Insulation Bonding Test System
See 0565

FOCAL PLANES
Liquid-Phase Epitaxial Growth of CdTe on HgCdTe
See 1087

FOLDING
Deployable Folded Antenna Apparatus
See 0221

FOLDING STRUCTURES
Foldable Self-Erecting Joint
See 0143

FOOD ADDITIVES
Animal Nutrition
See 0001

FOOD ANALYSIS
Method for Detecting Aflatoxin in Almonds
See 0009

FOOD COMPOSITION
Method for Reducing Sodium Content and Simultaneously Increasing Potassium Content of a Food
See 0012

FOOD PREPARATION
Method for Predicting the Acceptability of Coarsely Ground Beef
See 0010

FOOD PROCESSING
Production of Defatted Soybean Products by Supercritical Fluid Extraction
See 0018
Production of Food-Grade Corn Germ Product by Supercritical Fluid Extraction
See 0019

FORKLIFT VEHICLES
Multi-Directional Straddle-Lift Carrier
See 0673

FORMALDEHYDE
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0794
Synthesis of 2,4,8,10-Tetroxaspiro5,5undecane
See 0086

FOSSIL-FUEL POWER PLANTS
Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
See 0398

FREE ELECTRON LASERS
New Free Electron Laser Using a Relativistic Beam with Spiralling Electron
See 1013

FREE ELECTRONS
RF-Primed High Power Halogen Vial Apparatus
See 0213

FREE FLOW
Solid Sorbent Air Sampler
See 0629

FREEZE DRYING
Freeze Dried Raw Meats
See 0006

FREQUENCY AGILITY
Method and Means for Providing Frequency Agile Operation of MTI (Moving Target Indicator) Radar
See 0201

FREQUENCY CONVERTERS
Charge Depletion Meter
See 0510

FREQUENCY MODULATION
Analog Frequency Modulated Laser Using Magnetostriction
See 0989
Device for Frequency Modulation of a Laser Output Spectrum
See 0996

FREQUENCY MULTIPLIERS
Transistor Oscillator/Doubler
See 0297

FREQUENCY STABILIZERS
Low Noise Multiple Crystal-Controlled Oscillator
See 0267

FREQUENCY SYNTHESIZERS
Reactanceless Synthesized Impedance Bandpass Amplifier
See 0282

FRICTION DRAG
Combined Riblet and Lebu Drag Reduction System
See 0727

FRICTION MEASUREMENT
Two-Axis, Self-Nulling Skin Friction Balance
See 0647

FRUIT FLIES
Improved Method and Apparatus for the Mass Rearing of Fruit Flies
See 0561

FRUITS
Improved Method and Apparatus for the Mass Rearing of Fruit Flies
See 0561

Quarantine System for Papaya
See 0943

FUEL CELL POWER PLANTS
Reactant Pressure Differential Control for Fuel Cell Gases
See 0475

FUEL CELLS
Fuel Cell Having Dual Electrode Anode or Cathode
See 0460

Fuel Cell Separator Plate with Bellows-Type Sealing Flanges
See 0461

Reactant Pressure Differential Control for Fuel Cell Gases
See 0475

FUEL GAUGES
Volumetric Fuel Quantity Gauge
See 0652

FUEL INJECTION SYSTEMS
Air Blast Type Coal Slurry Fuel Injector
See 0387

Superheated Fuel Injection for Combustion of Liquid-Solid Slurries
See 0403

FUEL SLURRIES
Air Blast Type Coal Slurry Fuel Injector
See 0387

High Pressure Liquid Level Monitor
See 0552

Method of Burning Lightly Loaded Coal-Water Slurries
See 0394

Solvent Treatment of Coal for Improved Liquefaction
See 0401

Stabilizing Coal-Water Mixtures with Portland Cement
See 0402

Superheated Fuel Injection for Combustion of Liquid-Solid Slurries
See 0403

FUEL TANKS
Compartmented, Filament Wound, One-Piece Aircraft Fuel Tanks
See 1101

Volumetric Fuel Quantity Gauge
See 0652

FUELS
Flow Measurement Device
See 0544

Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
See 0015

FUNCTION GENERATORS
Precision Linear Ramp Function Generator
See 0278

FUNGI
Control of Mycotoxin Production by Chemically Inhibiting Fungal Growth
See 0004

Preparation of Pellets Containing Fungi and Nutrient for Control of Soilborne Plant Pathogens
See 0935

Strain of 'Trichoderma viride' to Control Fusarium Wilt
See 0948

FUNGUS DISEASES
Control of Eastern Black Nightshade with a Fungal Pathogen
See 0003

FURAN+TETRAHYDRO
Method of Preparing Tetrahydrofuran
See 0061

FUSELAGES
Helicopter Anti-Torque System Using Strakes
See 1107

FUSIBILITY
Improved Polyethylene Glycol (PEG) Reagent
See 0913

FUSION(MELTING)
Induction Heating Gun
See 0414

G FORCE ACCELERATION
Random Pattern Tracking Acceleration Tolerance Tester
See 0615

G SUITS
Servo Operated Anti-G Suit Pressurization System
See 0876

GALILEO PROJECT
Reed-Solomon Decoder
See 0107

GALLIUM ARSENIDES
Heterojunction Schottky Gate Mesfet with Lower Channel Ridge Barrier
See 0340

Low Stress Semiconductor-Insulator Interface for Cryogenic Device Applications
See 0342

Radiation Hardened Ion-Implanted GaAs Field Effect Transistor and Method for Making the Same Specification
See 0350

Selective Anodic Oxidation of Semiconductors for Pattern Generation
See 0351

Self-Aligned GaAs FET with Low 1/f Noise
See 0352

Transistor Oscillator/Doubler
See 0297

GALLIUM INDIUM ARSENIDES
Process for Making a Heterojunction Source-Drain Insulated Gate Field-Effect Transistors Utilizing Diffusion to Form the Lattice
See 0724

GAMMA DETECTION
Microchannel Plate Streak Camera
See 0590

GAMMA RAY SPECTROMETERS
Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
See 0578

GAMMA RAYS
Three-Dimensional and Tomographic Imaging Device for X-ray and gamma-Ray Emitting Objects
See 0640

GAS ANALYSIS
Oxygen Analyzer
See 0606

Variable Temperature Trap
See 0650

GAS BREAKDOWN
Multiple Parallel RF Excited CO2 Lasers
See 1012

GAS CENTRIFUGES
Method for Controlling the Viscosity of Siloxane Oils
See 0842

GAS COMPOSITION
Moisture Content and Gas Sampling Device
See 0594

GAS DETECTORS
Portable Remote Laser Sensor for Methane Leak Detection
See 0611

Reversible Optical Waveguide Vapor Sensor
See 0620

Shielded Sniffing Device
See 0625

GAS DISCHARGES
Multiple Parallel RF Excited CO2 Lasers
See 1012

GAS FLOW
Technique for Measuring Gas Conversion Factors
See 0636

Vortex Generating Flow Passage Design for Increased Film Cooling Effectiveness
See 1098

GAS GENERATING SYSTEMS
Low Temperature Inflator Apparatus
See 0485

GAS-INSULATED CABLES
Particle Trap for Compressed Gas Insulated Transmission Systems
See 0379

GAS JETS
Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
See 0496

GAS LASERS
Axial Flow Laser Cavity
See 0991

Exploding Conducting Film Laser Pumping Apparatus
See 0998

Jinc-Trap Resonator
See 1007

Magnetically Switched Power Supply Systems for Lasers
See 1008

Optically Pumped Iodine Monofluoride Laser
See 1014

Vacuum Ultraviolet Laser
See 1025

GAS SAMPLING
Remote Sequential Gas Sampler for Blasting Areas
See 0618

GAS TUNGSTEN-ARC WELDING
Control of Gas Tungsten Arc Welding Pool Shape by Trace Element Addition to the Weld Pool
See 0700

GAS TURBINE ENGINES
Oxidizing Seal for a Turbine Tip Gas Path
See 0749

GAS TURBINES
High Pressure Turbine Rotor Two-Piece Blade Retainer
See 0145

GASES
Apparatus for Determining the Liquid Water Content of a Gas
See 0497

GASOHOL
Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
See 0015

GATES(CIRCUITS)
FET Charge Sensor and Voltage Probe
See 0539
Optically Triggered Transferred-Electron Device Microwave Burst and Single Pulse Generators
See 0273
Phanton Computer Gating System
See 0971
Self-Aligned GaAs FET with Low 1/f Noise
See 0352

GENERATORS
Continuous Laminar Smoke Generator
See 0514
Gas Recirculator for Acyclic Machines
See 0308

GENES
Cloning and Expression of the Gene for Bacteriophage T7 RNA Polymerase
See 0901
Deoxyribonucleic Acid Molecules Useful as Probes for Detecting Deleterious Genes Incorporated into Chromosomal DNA
See 0903
Intact Gene and Method of Excising and Cloning Same
See 0915

GENETICS
Adeno-Associated Virus as Eukaryotic Expression Vector
See 0898

GEOTHERMAL SYSTEMS
Thermal Well-Test Method
See 0482

GEOTHERMAL WELLS
Thermal Protection Apparatus
See 0481
Thermal Well-Test Method
See 0482

GERMANIUM
Method for Producing High Quality Germanium-Germanium Nitride Interfaces for Germanium Semiconductors and Device Produced Thereby
See 0343

GERMANIUM NITRIDES
Method for Producing High Quality Germanium-Germanium Nitride Interfaces for Germanium Semiconductors and Device Produced Thereby
See 0343

GIMBALS
Brush and Commutator Segment Torquer Motor
See 0303

GLASS
Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
See 0408
Pressurized Heat Treatment of Glass Ceramic
See 0721

GLASS FIBERS
Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662

GLASS REINFORCED PLASTICS
System for Rapid Repair of Damaged Airfield Runways
See 0836

GLIAL CELLS
Immortal Line of Human Fetal Glial Cells
See 0911

GLOBAL POSITIONING SYSTEM
Transdigitizer for Relaying Signals from Global Positioning System (GPS) Satellites
See 0974

GLOW DISCHARGES
Fluorination by Inorganic Fluorides in Glow Discharge
See 0760

GLYCOL MALEIC ACID+PROPYLENE
Stabilized Unsaturated Polyesters
See 0082

GLYCOLIPID+ACETYL
Antihypertensive Neutral Lipid
See 0041

GLYCOLS
Mild-Cure Formaldehyde-Free Durable-Press Finishing of Cotton Textiles with Glyoxal and Glycols
See 0791
Stabilized Unsaturated Polyesters
See 0082

GLYCOPROTEINS
Purification of Uromodulin
See 0893

GOUT
Carbamates of Colchicine for Treatment of Gout
See 0046

GRADIOMETERS
Rotating Squid Magnetometers and Gradiometers
See 0621

GRAIN CROPS
Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

GRAIN WEEVILS
Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

GRANULAR MATERIALS
Carbon Granule Probe Microphone for Leak Detection
See 0509

GRANULATION
Granulation of Urea Phosphate from Urea and Merchant-Grade Phosphoric Acid
See 0007

GRAPHITE
Light Weight Fire Resistant Graphite Composites
See 0781
Multistage Spent Particle Collector and a Method for Making Same
See 0674

GRATINGS(SPECTRA)
Bandpass Filter Formed by Serial Gratings Operating in a Wood's Anomaly Region
See 1030
High Resolution Diffraction Grating
See 1045
Method of Producing a Buried Long Period Grating
See 1058
Solar Energy Converter Using Surface Plasma Waves
See 0440

GRINDERS
In-Situ Annular Face Grinder
See 0668
Microwave Drying of Ammonium Perchlorate Grinding Spheres
See 0718
Very High Speed Lap with Negative Lift Effect
See 0692
Very High Speed Lap with Positive Lift Effect
See 0693

GRINDING
Very High Speed Lap with Negative Lift Effect
See 0692

GRINDING MILLS
Improved Silicon Grinding Method and Apparatus
See 0706

GROOVES
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413
Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417

GROUP III COMPOUNDS
Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch
See 0035

GROUP IV COMPOUNDS
Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch
See 0035

GROUTING
Machine for Mixing and Injecting Water and Grout into a Roof Bolt Hole
See 0957

GROWTH FACTORS
Human SCLC (Small Cell Lung Cancer) Autocrine Growth Factors and Monoclonal Antibody Blocking the Same
See 0909

GROWTH REGULATORS
Control of Mycotoxin Production by Chemically Inhibiting Fungal Growth
See 0004

GUARD RINGS
Self-Guarding Schottky Barrier Infrared Detector Array
See 0182

GUIDANCE COMPUTERS
Polaris Guidance System
See 0973

GUIDANCE SENSORS
Phase Sensitive Guidance Sensor for Wire-Following Vehicles
See 0972

GUIDED MISSILE ANTENNAS
Dual Mode Radio Frequency-Infrared Frequency System
See 0968
Hardwire Missile Receiver Coupler
See 0225

GUIDED MISSILE COMPUTERS
Polaris Guidance System
See 0973

GUIDED MISSILE LAUNCHERS
Hardwire Missile Receiver Coupler
See 0225
Lateral Support System for Canister-Launched Missile
See 0746

GUNN DIODES
Coaxial Cavity Gunn Oscillator Using Probe Coupled Microstrip
See 0240
Integrated Varactor Tuned Coaxial Gunn Oscillator for 60 GHz Operation
See 0265

GYROSCOPES
Fiber Optic Gyroscope with Alternating Output Signal
See 0969
Gyro Sensor Block Suspension
See 0970
Transient Test of Suspension Electronics for Gyroscope
See 0975

HALL EFFECT
Power Circuit Utilizing Self-Excited Hall Effect Switch Means
See 0276

HARDNESS

HARDNESS
Deposition of Diamondlike Carbon Films
See 0757

HARMONIC GENERATORS
Quasi-Optical Harmonic Gyrotron and Gyroklystron
See 0381
Transistor Oscillator/Doubler
See 0297

HARNESSES
Torso Restraint System
See 1120

HARVESTING
Apparatus to Improve the Operation of a Continuously Moving Harvester for Tree Crops
See 0002

HAZARDOUS MATERIALS
Liquid Sampling System
See 0572

HEADRESTS
Powered Articulated Headrest System
See 0488

HEAT EXCHANGERS
Heat Management System for Aircraft
See 1106
High Energy Laser Mirror
See 1002
Piezoelectric Polymer Heat Exchanger
See 0422
Reciprocating Magnetic Refrigerator Employing Tandem Porous Matrices within a Reciprocating Displacer
See 0423
Woven Heat Exchanger
See 0430

HEAT FLOW
Convective Heat Flow Probe
See 0453

HEAT MEASUREMENT
Device and Method for Measuring the Energy Content of Hot and Humid Air Streams
See 0518

HEAT PIPES
Heat Pipe and Method of making same
See 0409
Heat Pipe Cooled Probe
See 0549
Heat Pipe Wick
See 0410
High Thermal Power Density Heat Transfer Apparatus Providing Electrical Isolation at High Temperature Using Heat Pipes
See 0412
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413
Multi-Leg Heat Pipe Evaporator
See 0418
Temperature-Controllable Heat Valve
See 0427

HEAT PUMPS
Gas Hydrate Cool Storage System
See 0407
Solid State Radiative Heat Pump
See 0426

HEAT RECOVERY
Method for Controlled Burnout of Abandoned Coal Mines and Waste Banks
See 0416
Woven Heat Exchanger
See 0430

HEAT RESISTING ALLOYS
Long Range Ordered Alloys Modified by Addition of Niobium and Cerium
See 0803

HEAT SHIELDING
Mechanical Fastener
See 0150

HEAT SINKS
Heat Sinking for Printed Circuitry
See 0257

HEAT SOURCES
Low Gravity Exothermic Heating/Cooling Apparatus
See 0415

HEAT STORAGE
Saltless Solar Pond
See 0438
Stable Density Stratification Solar Pond
See 0443

HEAT TRANSFER
High Thermal Power Density Heat Transfer Apparatus Providing Electrical Isolation at High Temperature Using Heat Pipes
See 0412
Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417
Thermochemical Energy Transport Using a Hydrogen Rich Working Fluid
See 0483

HEAT VALVES
Temperature-Controllable Heat Valve
See 0427

HEATER BLOCK ASSEMBLY
Heater Block Assembly for Use in Thermal Oxidation Testing of Jet Fuel
See 0551

HEATING
Low Gravity Exothermic Heating/Cooling Apparatus
See 0415

HEATING CONTROL
Opacity Control Technique for Jet Engine Test Cells
See 0602

HEATING ELEMENTS
Small Cartridge Heater
See 0847

HEATING EQUIPMENT
Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
See 0408
Precision Manipulator Heating and Cooling Apparatus for Use in UHV (Ultrahigh Vacuum) Systems with Sample Transfer Capability
See 0681

HELICAL ANTENNAS
Dual Sense, Circularly Polarized Helical Antenna
See 0223

HELICAL COIL
Helical Coil for Diathermy Apparatus
See 0859

HELICOPTERS
Helicopter Anti-Torque System Using Strakes
See 1107

HELIOSTATS
Rim-Drive Cable-Aligned Heliostat Collector System
See 0437

HELMET MOUNTED DISPLAYS
Helmet Mounted Telescope
See 1043

HELMET MOUNTED SIGHTS
Direct View Helmet Mounted Telescope
See 0168

HELMETS
Helmet Mounted Telescope
See 1043

HEMOGLOBIN
Intramolecularly Crosslinked Hemoglobin
See 0916
Preparation of Stroma-Free, Non-Heme Protein-Free Hemoglobin
See 0936

HEPATITIS
Purified Antigen from Non-A, Non-B Hepatitis Causing Factor
See 0942

HEPATITIS A VIRUS
Isolation of Hepatitis A Virus Strain HM-175
See 0920

HEPATITIS VIRUSES
Isolation of Hepatitis A Virus Strain HM-175
See 0920

HEPTADECADIENES
Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052

HEPTANONE + HYDROXY-METHYL
Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

HERBICIDES
Nonabsorbent Roller Applicator
See 0931
Rope Wick Applicator
See 0022

HERMETIC SEALS
Method for Bonding Insulator to Insulator
See 0747

HERPES SIMPLEX VIRUS
Enzyme-Linked Immunosorbent Assay (ELISA) for Determining Anti-Bodies against Herpes Simplex Virus (HSV) Types 1 and 2 in Human Sera
See 0905

HETEROCYCLIC COMPOUNDS
Method for Making Heterocyclic Block Copolymers
See 0060

HETEROJUNCTIONS
Diffusion Barrier for Long Wavelength Laser Diodes
See 0997
Process for Making a Heterojunction Source-Drain Insulated Gate Field-Effect Transistors Utilizing Diffusion to Form the Lattice
See 0724

HIDES
Automatic Hide Processing Apparatus
See 0657
Process and Compositions for Preserving Fresh Hides and Skins
See 0846

HIGH ALTITUDE BALLOONS
Thin Film Strain Transducer
See 0639

HIGH POWER LASERS
Magnetically Switched Power Supply Systems for Lasers
See 1008

HIGH PRESSURE
Damping Seal for Turbomachinery
See 0742

HIGH PRESSURE TESTS
High Pressure Liquid Level Monitor
See 0552

HIGH SPEED PHOTOGRAPHY
Method and Apparatus for High Speed, Sustained Recording of Infrared Laser Beam Patterns
See 1010

HIGH TEMPERATURE
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0047

Multistage Spent Particle Collector and a Method for Making Same
See 0674

Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470

Overlay Metallic-Cermet Alloy Coating Systems
See 0763

HIGH TEMPERATURE ENVIRONMENTS

Heat Pipe Cooled Probe
See 0549

HIGH-VOLTAGE PULSE GENERATORS

Reversing-Counterpulse Repetitive-Pulse Inductive Storage Circuit
See 0283

Series-Counterpulse Repetitive-Pulse Inductive Storage Circuit
See 0479

HIGH VOLTAGES

High Voltage Isolation Transformer
See 0324

High Voltage Power Supply
See 0262

HOISTS

One-Step Loading Adapter
See 0677

Pivotable Support for Rescue Hoist
See 1119

HOLDERS

Apparatus for Mounting a Field Emission Cathode
See 0318

Suture Needle Holder
See 0878

HOLLOW CATHODES

Hollow Cathode Apparatus
See 0554

HOLOGRAMS

Diffraction Diffusion Screen with Holographically-Suppressed Zero-Order Beam
See 1035

Laser Generation of Ultrasonic Waveform Reconstructions
See 0567

HOMING DEVICES

Dual Mode Radio Frequency-Infrared Frequency System
See 0968

HOODS

Light-Weight Oxygen Delivery Hood Assembly for Hyperbaric Chamber
See 0864

HOPPERS

Fluidizing Device for Solid Particulates
See 0666

HORMONES

Rapid Bioassay and a Kit for Peptide Hormones
See 0944

HOT WORKING

Hot Rolling of Ceramics by the Use of Self Propagating Synthesis
See 0704

Optimizing Hot Workability and Controlling Microstructures in Difficult to Process High Strength and High Temperature Materials
See 0812

HUBS

Self-Locking Mechanical Center Joint
See 0685

HUMAN FACTORS ENGINEERING

Shoulder and Hip Joint for Hard Space Suits and the Like
See 0877

Torso Sizing Ring Construction for Hard Space Suit
See 0879

HUMIDITY

Humidity Sensing and Measurement Employing Halogenated Organic Polymer Membranes
See 0555

HYBRID CIRCUITS

Data Acquisition Channel Apparatus
See 0245

HYBRID SYSTEMS

Single Optical Fiber Telephone System
See 0110

HYBRIDIZATION

Improved Polyethylene Glycol (PEG) Reagent
See 0913

HYDRAULIC ACTUATORS

Hydraulic Locking Boltwork System
See 0146

HYDRAULIC EQUIPMENT

Multiple Rate Shock Isolator Damping Valve
See 0486

HYDRAULIC MINING

Hydraulic Mining Method
See 0955

HYDRAZINES

Reversible Optical Waveguide Vapor Sensor
See 0620

HYDRIDES

Porous Metallic Bodies
See 0814

HYDROCARBON FUELS

Solar-Heated Oil Shale Retort
See 0442

HYDROCARBONS

Technique for Measuring Gas Conversion Factors
See 0636

HYDROGEN

Solid State Hydrogen Pumping and Storage Material,
See 0400

HYDROGENATION

Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824

HYDROPHONES

Apparatus and Method for Determining the Phase Sensitivity of Hydrophones
See 1081

Directional Line-Hydrophone Array Calibrator
See 0163

Sonobuoy Float Inflation and Depth Selection Initiators
See 0737

Transducer Hydrophone with Filled Reservoir
See 0645

Transversely Reinforced Piezoelectric Composites
See 0789

HYGROMETERS

Trace Water Sensor
See 0643

HYPERBARIC CHAMBERS

Light-Weight Oxygen Delivery Hood Assembly for Hyperbaric Chamber
See 0864

HYPERBARIC MEDICINE

Light-Weight Oxygen Delivery Hood Assembly for Hyperbaric Chamber
See 0864

IGNITERS

Hollow Cathode Apparatus
See 0554

Low Gravity Exothermic Heating/Cooling Apparatus
See 0415

ILLUMINATION

Night Vision Compatible Illumination for Vehicle Crewmember Workspace
See 0419

IMAGE CONVERTERS

CCD (Charge-Coupled Device) Gaussian Convolution Method
See 0359

IMAGE ENHANCEMENT

Use of Paramagnetic Metalloporphyrins as Contrast Agents for Tumors in NMR Imaging
See 0881

IMAGE PROCESSING

Arithmetic Pipeline for Image Processing
See 0119

Electronic Imaging System and Technique
See 0363

Longwall Shearer Tracking System
See 0956

Polarimetric Image Recorder
See 0983

Spatial Frequency Multiplexed Coherent Optical Processor for Calculating Generalized Moments
See 1067

Two-Dimensional Bulk Acoustic Wave Correlator-Convolver
See 0299

IMAGE PROJECTORS

Improved Real-Time Ultra-High Resolution Image Projection Display Using Laser-Addressed Liquid Crystal Light Valve
See 0368

IMAGING TECHNIQUES

Longwall Shearer Tracking System
See 0956

Method and Apparatus for Delta Kappa Synthetic Aperture Radar Measurement of Ocean Current
See 0199

Optical System
See 1065

Three-Dimensional and Tomographic Imaging Device for X-ray and gamma-Ray Emitting Objects
See 0640

IMIDES

High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

Phosphorus-Containing Imide Resins
See 0067

IMMUNE SERUMS

Purification of Uromodulin
See 0893

IMMUNITY

Isolated, Soluble Immunogen Against 'Schistosoma mansoni' and a Method of Vaccination Employing Same
See 0918

IMMUNOGLOBULINS

Monoclonal Antibodies to Porcine Immunoglobulins
See 0929

IMMUNOLOGY

Immunologically Active Peptides Capable of Inducing Immunization against Malaria and Genes Encoding Therefor
See 0912

Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058

IMMUNOSORBENT ASSAYS

Competitive ELISA (Enzyme-Linked Immunosorbent Assay) for the Detection of Antibodies
See 0902

IMPACT DAMAGE

Curved Cap Corrugated Sheet
See 1102

IMPACT TESTING MACHINES

IMPACT TESTING MACHINES
Impacting Device for Testing Insulation
See 0557

IMPACT TESTS
Impacting Device for Testing Insulation
See 0557

IMPEDANCE MATCHING
Broadband Matching Network
See 0161

IMPELLERS
Fluidic Angular Velocity Sensor
See 0545

IMPURITIES
Method of Reducing Impurity and Antisite Defects in Semiconductor Crystal Materials, and Device and Apparatus Respectively Produced from and Utilizing Same
See 1094

IN-SITU COMBUSTION
Method for Controlled Burnout of Abandoned Coal Mines and Waste Banks
See 0416
Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
See 0960

IN VIVO ANALYSIS
Chelating Agents for the Treatment of Iron Overload
See 0886

INCONEL X750
Nitriding of Super Alloys for Enhancing Physical Properties
See 0811

INCONEL 600
Nitriding of Super Alloys for Enhancing Physical Properties
See 0811

INCONEL 625
Nitriding of Super Alloys for Enhancing Physical Properties
See 0811

INCONEL 718
Nitriding of Super Alloys for Enhancing Physical Properties
See 0811

INDICATING INSTRUMENTS
Adjustable Indicating Device for Load Position
See 0493

INDIUM COMPOUNDS
Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
See 1085

INDIUM PHOSPHIDES
Diffusion Barrier for Long Wavelength Laser Diodes
See 0997
Method for Synthesizing Indium Phosphide
See 1091
TiW Diffusion Barrier for AuZn Ohmic Contacts to P-Type InP
See 0353

INDIUM 111
Indium-111 Labeled Anti-Melanoma Monoclonal Antibodies
See 0914

INDOOR AIR POLLUTION
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0793

INDUCTION FURNACES
Non-Carbon Induction Furnace
See 0420

INDUCTION HEATING
Induction Heating Gun
See 0414

INDUCTION MOTORS
Coupling an Induction Motor Type Generator to AC Power Lines
See 0455
Power Control for AC Motor
See 0312
Solar Powered Actuator with Continuously Variable Auxiliary Power Control
See 0441
Three-Phase Power Factor Controller with Induced EMF Sensing
See 0313

INERTIAL GUIDANCE
Polaris Guidance System
See 0973

INFLATABLE STRUCTURES
Tire Deflation Mechanism
See 0489
Tire Inflation/Deflation System
See 0490

INFLATING
Low Temperature Inflator Apparatus
See 0485

INFORMATION SYSTEMS
Retinal Information Mapping System
See 0874

INFRARED DETECTION
Electro-Optical Target Detection
See 0171

INFRARED DETECTORS
Buried Junction Enhanced Schottky Barrier Device
See 0167
Self-Guarding Schottky Barrier Infrared Detector Array
See 0182
Sensor System
See 0183
Thermal Sensor with an Improved Coating
See 0184

INFRARED EQUIPMENT
Bandpass Filter Formed by Serial Gratings Operating in a Wood's Anomaly Region
See 1030

INFRARED HOMING
Dual Mode Radio Frequency-Infrared Frequency System
See 0968

INFRARED IMAGES
Infrared System with Computerized Image Display
See 0172

INFRARED INSTRUMENTS
Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

INFRARED LASERS
High Temperature Ultra-High Vacuum Infrared Window Seal
See 1005
W-Shaped Diffused Stripe GaAs/AlGaAs (Gallium Arsenide/Aluminium Gallium Arsenide) Laser
See 1027

INFRARED OPTICAL SYSTEMS
Infrared Optical Measurement of Blood Gas Concentrations and Fiber Optic Catheter
See 0862

INFRARED RADIATION
Double Photon Excitation of High-Rydberg Atoms as a Long-Lived Submillimeter Detector
See 0169

INFRARED SCANNING
Infrared System with Computerized Image Display
See 0172

INFRARED WINDOWS
High Temperature Ultra-High Vacuum Infrared Window Seal
See 1005

INHIBITORS
Purification of Uromodulin
See 0893
Substantially Purified Tumor Growth Inhibitory Factor (TIF)
See 0895

INJECTION LASERS
Arrangement for Damping the Resonance in a Laser Diode
See 0990
Injection Controlled Laser Transmitter with Twin Local Oscillators
See 0173

INKS
Dot Matrix Color Printer
See 0977

INSECT ATTRACTANTS
Bagworm Moth Attractant and Plant Protectant
See 0044
Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052
Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

INSECT CONTROL
Bagworm Moth Attractant and Plant Protectant
See 0044
Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052
Ovipositional Stimulant for Trichogramma Spp
See 0933
Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxbenzenes in Insect Population Control
See 0072
Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

INSECT REPELLENTS
Novel Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0932

INSECTS
Boll Weevil Trap
See 0900
Improved Method and Apparatus for the Mass Rearing of Fruit Flies
See 0561

INSTRUMENTATION
Fiber Optic System for Measuring Electric Fields
See 0542

INSULATION
Heat Resistant Sheathed Insulated Electrical Conductors
See 0366
Impacting Device for Testing Insulation
See 0557
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413

INTAKE SYSTEMS
Continuous Laminar Smoke Generator
See 0514

INTEGRATED CIRCUITS
Data Acquisition Channel Apparatus
See 0245
Method for the Fabrication of Dielectric Isolated Junction Field Effect Transistor and PNP Transistor
See 0714
Method of Characterizing Critical Timing Paths and Analyzing Timing Related Failure Modes in Very Large Scale Integrated Circuits
See 0588
Method of Examining Microcircuit Patterns
See 0344

Optoelectronic Integrated Circuit Multiplier
See 1066
Routing Method in Computer Aided Customization of a Two Level Automated Universal Array
See 0284
Selective Anodic Oxidation of Semiconductors for Pattern Generation
See 0351
Split-Cross-Bridge Resistor for Testing for Proper Fabrication of Integrated Circuits
See 0725

INTEGRATED PARATROOP DOOR
Integrated Paratroop Door
See 1108

INTEGRATED SYSTEMS
Integrated Wavelength Demultiplexer
See 0369

INTERFACES
LDV(Lase Doppler Velocimeter) Multiplexer Interface
See 0100
Parallel Local Interface Bus
See 0133
Programmable Realtime Interface between a Block Floating Point Processor and Memory
See 0208

INTERFERENCE
Adaptive MTI (Moving Target Indicator) System
See 0186
Apparatus for Locating Passive Intermodulation Interference Sources
See 1083

INTERFEROMETERS
Fiber Optic Gyroscope with Alternating Output Signal
See 0969
Fiber Optic Sensors Operating at DC
See 0541
Technique for the Reduction of Fading in Interferometers
See 1071

INTERFEROMETRY
Dual Differential Interferometer
See 0525

INTERLEUKIN-1
Purification of Uromodulin
See 0893

INTERMETALLICS
Oxidizing Seal for a Turbine Tip Gas Path
See 0749

INTERNAL COMBUSTION ENGINES
Air Blast Type Coal Slurry Fuel Injector
See 0387

INVERTERS
IREB (Intense Relativistic Electron Beam) Converter to AC Pulses
See 0465

IODINE FLUORIDE LASERS
Optically Pumped Iodine Monofluoride Laser
See 1014

IODINE LASERS
Exploding Conducting Film Laser Pumping Apparatus
See 0998

ION BEAMS
Deposition of Diamondlike Carbon Films
See 0757
Diamondlike Flakes
See 0758
Ion-Beam Nitriding of Steels
See 0707
Oxidation Protection Coatings for Polymers
See 0764

ION IMPLANTATION
Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
See 1085
Process for Producing Carbide Coatings
See 0767
Radiation Hardened Ion-Implanted GaAs Field Effect Transistor and Method for Making the Same Specification
See 0350
Wear Improvement in Titanium Alloys by Ion Implantation
See 0817

IONIZATION POTENTIALS
Modulated Voltage Metastable Ionization Detector
See 0593

IONIZED GASES
Hollow Cathode Apparatus
See 0554

IRON
Method for the Deposition of High-Quality Crystal Epitaxial Films of Iron
See 1092
Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470

IRON ALLOYS
Ductile Duplex Iron-Based Alloy Containing Aluminum
See 0801
Long Range Ordered Alloys Modified by Addition of Niobium and Cerium
See 0803

IRON BASE ALLOYS
Metallic Glass Composition
See 0805

IRON OVERLOADS
Chelating Agents for the Treatment of Iron Overload
See 0886

ISOLATION
High Voltage Isolation Transformer
See 0324

JACKS(LIFTS)
Cargo Handling System
See 0659

JET ENGINE FUELS
Heater Block Assembly for Use in Thermal Oxidation Testing of Jet Fuel
See 0551

JEWEL BEARINGS
Precise Bearing Support Ditherer
See 0679
Precise Bearing Support Ditherer with Piezoelectric Drive Means
See 0680

JOINTS (JUNCTIONS)
Foldable Self-Erecting Joint
See 0143
Self-Locking Mechanical Center Joint
See 0685
Shoulder and Hip Joint for Hard Space Suits and the Like
See 0877

JOISTS
Wood Beam
See 0848

JOSEPHSON JUNCTIONS
Coherent Array of Josephson Oscillators with External Bias Leads
See 0241
Transmission Line Biased Coherent Array of Josephson Oscillators
See 0298

JUNCTION DIODES
Buried Junction Enhanced Schottky Barrier Device
See 0167

KERATINS
Synthetic Peptides for the Production of Specific Keratin Proteins
See 0087

KEROGEN
Solar-Heated Oil Shale Retort
See 0442

KETONES
Polyaromatic Ether-Sulfone-Keytones with Fluoro-Substituted-P-Cyclophane Units as Cross-Linking Sites
See 0071
Pseudo-P-1,2,2,9,9,10,10-Octo-Fluoro(2,2)-P-Cyclophane Bis-Acid Chloride
See 0078

KIDNEYS
Apparatus for Disintegrating Kidney Stones
See 0849

KLYSTRONS
Collective Interaction Klystron Specification
See 0361
Quasi-Optical Harmonic Gyrotron and Gyroklystron
See 0381
Quasioptical Gyroklystron
See 0382

KNEE(ANATOMY)
Elbow and Knee Joint for Hard Space Suits and the Like
See 0854

LABORATORY EQUIPMENT
Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498
Cold Plate for Laboratory Use
See 0852
Implantation Device for Use In vivo Stimulation and Collection of Monocytes from Peritoneum of Vertebrate
See 0860
Multi-Layer Coil Assembly Coaxially Mounted Around the Rotary Axis for Preparatory Countercurrent Chromatography
See 0595
Multi-Layer Coil Countercurrent Chromatograph with Adjustable Revolutional Radius
See 0596

LAMINAR FLOW
Continuous Laminar Smoke Generator
See 0514

LAMINATES
Fire and Heat Resistant Laminating Resins Based on Maleimido and Citraconimido Substituted 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diaminobenzenes
See 0823

LAND POLLUTION
Soil Extraction Kit
See 0627

LANDING MATS
Prefabricated Panels for Rapidly Runway Repair and Expedient Airfield Surfacing
See 0784

LARGE SCALE INTEGRATION
Method of Examining Microcircuit Patterns
See 0344

LARGE SPACE STRUCTURES
Self-Locking Mechanical Center Joint
See 0685

LASER APPLICATIONS
External Cavity Diode Laser Sensor
See 0534
Method of and Apparatus for Measuring Temperature and Pressure
See 0587
Portable Remote Laser Sensor for Methane Leak Detection
See 0611

LASER BEAMS
Controlled-Linewidth Laser Source
See 0992

LASER CAVITIES

Interface Alignment System
See 1048

Laser Target Speckle Eliminator
See 1050

Method and Apparatus for Generating a Structured Light Beam Array
See 1055

Method and Apparatus for Generating a Structured Light Beam Array
See 1056

Method and Apparatus for High Speed, Sustained Recording of Infrared Laser Beam Patterns
See 1010

Multiple Site Laser Excited Pollution Monitoring System
See 0597

Optical RF Downconverter
See 1064

Picosecond Broadband CARS (Coherent Antistokes Raman Spectroscopy) Probe Using the Picosecond Continuum
See 0608

Total Internal Reflection Modulator/Deflector
See 1075

Turbulence Measurement Interferometer Apparatus
See 0646

LASER CAVITIES

Axial Flow Laser Cavity
See 0991

Halogen Mass Flow Rate Detection System
See 1001

Jinc-Trap Resonator
See 1007

Multiple Parallel RF Excited CO2 Lasers
See 1012

LASER CLOCKS

Laser Clock
See 0566

LASER DOPPLER VELOCIMETERS

LDV(Lase Doppler Velocimeter) Multiplexer interface
See 0100

Projection Lens Scanning Laser Velocimeter System
See 0612

Vibration-Free Raman Doppler Velocimeter
See 0651

LASER DUMPS

High Power Laser Dump
See 1003

LASER MATERIALS

Device for Cryogenically Fabricating Source Material for Plasma X-ray Lasers
See 0995

High Energy Laser Mirror
See 1002

LASER MIRRORS

Three-Point Spherical Mirror Mount
See 1023

LASER PUMPING

Delta Wing Nozzle Assembly for Chemical Lasers
See 0994

Device for Cryogenically Fabricating Source Material for Plasma X-ray Lasers
See 0995

Optically Pumped Laser System Having Extracavity Pulse Smoother
See 1015

LASER RADIATION

Device for Frequency Modulation of a Laser Output Spectrum
See 0996

Simple Power Meter for High Energy Pulsed Lasers
See 1021

LASER SPECTROSCOPY

Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
See 0495

LASER VIBROMETERS

Laser Vibrometer
See 0569

LASERS

Analog Frequency Modulated Laser Using Magnetostriction
See 0989

High Power Metal Vapor Laser
See 1004

Multiple Double Heterojunction Buried Laser Device
See 1011

Phased Locked Array Laser Systems
See 1017

Visible and Ultraviolet Lasers Based on Excimer Transitions in the Homonuclear Halogens
See 1026

LATCHES

Hemispherical Latching Apparatus
See 0144

Latch for Detachably Securing Electronic Cards Along Orthogonal Loading Axes
See 0147

Over-Center Toggle Latch
See 0151

LATERAL CONTROL

Leading Edge Flap System for Aircraft Control Augmentation
See 1109

LAUNCH TUBES

Lateral Support System for Canister-Launched Missile
See 0746

LEAD COMPOUNDS

Method and System for Producing Lower Alcohols
See 0392

Method for Preparing Pb- beta ''-Alumina Ceramic
See 0843

LEAD LASERS

High Power Metal Vapor Laser
See 1004

LEAD WIRES

Variable Radius Lead Former
See 0691

LEADING EDGE FLAPS

Leading Edge Flap System for Aircraft Control Augmentation
See 1109

LEAD(METAL)

Production of Lead from Sulfides
See 0961

LEAKAGE

Carbon Granule Probe Microphone for Leak Detection
See 0509

Portable Remote Laser Sensor for Methane Leak Detection
See 0611

LENS ANTENNAS

Radio Frequency Lens Antenna
See 0233

LEUKEMIA

Production of Human T-Cell Leukemia (Lymphotropic) Retrovirus (HTLV-I) Envelope Protein Fragments in Bacteria and Use in Seroepidemiological Survey of Human Lymphoid Malignancies
See 0940

LEUKOCYTES

Human Monocytes Cultured in Suspension in Serum-Free Medium
See 0908

Implantation Device for Use In vivo Stimulation and Collection of Monocytes from Peritoneum of Vertebrate
See 0860

LEVEL INDICATORS

Liquid Level Detector
See 0571

Wireless Remote Liquid Level Detector and Indicator for Well Testing
See 0967

LEVITATION

Closed Loop Electrostatic Levitation System
See 0304

LEVITATION MELTING

High Temperature Acoustic Levitator
See 0703

LIFE(DURABILITY)

Apparatus for Disintegrating Kidney Stones
See 0849

LIFT DRAG RATIO

Over the Wing Propeller
See 1110

LIGANDS

Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

LIGHT

Apparatus for Determining the Liquid Water Content of a Gas
See 0497

LIGHT EMITTING DIODES

Focal Plane Array Optical Proximity Sensor
See 1042

Reversible Optical Waveguide Vapor Sensor
See 0620

LIGHT MODULATORS

Charge Isolation in a Spatial Light Modulator
See 1032

Differentiating Spatial Light Modulator
See 1034

Electron-Bombarded Silicon Spatial Light Modulator
See 1039

Spatial Light Modulator Having a Capacitively Coupled Photoconductor
See 1068

LIGHT PULSES

Apparatus for Generating a Focusable and Scannable Ultrasonic Beam for Non-Destructive Examination
See 0499

LIGHT SCATTERING

Laser Target Speckle Eliminator
See 1050

Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
See 0585

Technique to Reduce Scattered Light in Optical Systems
See 1072

LIGHT TRANSMISSION

Diffraction Diffusion Screen with Holographically-Suppressed Zero-Order Beam
See 1035

Light Transmitting Window Assembly
See 1051

LIGHT VALVES

Liquid Crystal Light Valve Structures
See 1052

LIGHTING EQUIPMENT

Night Vision Compatible Illumination for Vehicle Crewmember Workspace
See 0419

LIGHTING SYSTEMS

Rod-to-Rod Spacing Illuminating Device
See 0424

LIMITERS
Frequency Selective Signals-to-Noise Enhancer/Limiter Apparatus
See 0255
Monolithic Planar Doped Barrier Limiter
See 0346

LINE SCANNING
Filter Reflection Image Guide Oscillator and Solid State Line Scanning Device
See 0254

LINE WIDTH
Controlled-Linewidth Laser Source
See 0992

LINEAR ARRAYS
Sampled Towed Array Telemetry
See 0165

LINEAR SYSTEMS
Linear Magnetic Bearings
See 0670

LINEARITY
Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

LIPIDS
Antihypertensive Neutral Lipid
See 0041
Magnetically-Localizable, Polymerized Lipid Vesticles and Method of Disrupting Same
See 0688

LIQUID COOLING
Low Gravity Exothermic Heating/Cooling Apparatus
See 0415

LIQUID CRYSTAL DISPLAY SYSTEMS
Improved Real-Time Ultra-High Resolution Image Projection Display Using Laser-Addressed Liquid Crystal Light Valve
See 0366

LIQUID CRYSTALS
Differentiating Spatial Light Modulator
See 1034
Liquid Crystal Light Valve Structures
See 1052

LIQUID HYDROGEN
Ten Degree Kelvin Hydride Refrigerator
See 0428

LIQUID INJECTION
Vortex Generating Flow Passage Design for Increased Film Cooling Effectiveness
See 1098

LIQUID METALS
Arc Spray Fabrication of Metal Matrix Composite Monotape
See 0772

LIQUID PHASE EPITAXY
Liquid Phase Epitaxy (LPE) of Silicon Carbide
See 1086

LIQUID SURFACES
Liquid Thickness Gage
See 0573

LIQUID-VAPOR INTERFACES
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413

LIQUID WASTES
Liquid Sampling System
See 0572

LIQUID WATER CONTENT
Apparatus for Determining the Liquid Water Content of a Gas
See 0497

LIQUIDS
Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
See 0495
Concentric Micro-Nebulizer for Direct Sample Insertion
See 0513
Liquid Thickness Gage
See 0573
Recirculating Wiper for Agricultural Chemicals
See 0021

LITHIUM
Lithium Counterdoped Silicon Solar Cell
See 0433
Lithium Purification Technique
See 0802

LITHIUM CARBONATES
Improved Catalysts for Carbon and Coal Gasification
See 0389

LITHIUM CELLS
Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451
Cathode Including a Non Fluorinated Linear Chain Polymer as the Binder, Method of Making the Cathode, and Lithium Electrochemical Cell Containing the Cathode
See 0452
Improved Cell Design for Lithium Alloy/Metal Sulfide Battery
See 0463
Lithium Aluminum/Iron Sulfide Battery Having Lithium Aluminum and Silicon as Negative Electrode
See 0466
Rechargeable Lithium Cell
See 0476

LITHIUM-SULFUR BATTERIES
Improved Cell Design for Lithium Alloy/Metal Sulfide Battery
See 0463
Lithium Aluminum/Iron Sulfide Battery Having Lithium Aluminum and Silicon as Negative Electrode
See 0466

LITHIUM SULFUR CHLORIDE CELLS
Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

LITHIUM THIONYL CHLORIDE CELLS
Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451

LMFBR TYPE REACTORS
Fast Reactor Power Plant Design Having Heat Pipe Heat Exchanger
See 0458

LOADING OPERATIONS
Shuttle Car Loading System
See 0965

LOADING(HANDLING)
Cargo Handling System
See 0659
One-Step Loading Adapter
See 0677

LOADS (FORCES)
Aircraft Rotor Blade with Passive Tuned Tab
See 1099
Tensile Testing Apparatus
See 0637

LOADS(FORCES)
Adjustable Indicating Device for Load Position
See 0493

LOCKING
Elbow and Knee Joint for Hard Space Suits and the Like
See 0854
Self-Locking Mechanical Center Joint
See 0685

LOCKING FASTENER DEVICES
Mechanical Locking between Multi-Layer Printed Wiring Board Conductors and Through-Hole Plating
See 0269
Padlock Shackle
See 0152

LOCKING(MECHANICS)
Hydraulic Locking Boltwork System
See 0146

LOGIC CIRCUITS
Elevator/Hatch Controller Platform Leveling Logic with Safety Features
See 0730
Switch Debounce Circuit
See 0292

LONGITUDINAL CONTROL
Remote Pivot Decoupler Pylon: Wing/Store Suppression
See 1113

LOOP ANTENNAS
Loop Radiating Elements
See 0228

LUBRICANTS
Fluorinated Aliphatic Polyalkylether Lubricant with an Additive Composed of an Aromatic Phosphine Substituted with Perfluoroalkylether Groups
See 0839

LUMINANCE
Television Camera Video Level Control System
See 0113

LYSIS
Lysis of 'Trypanosoma Cruzi'
See 0921

MACHINE TOOLS
Machine with an Intermittently Rotating Table for the Performance of Work Operations
See 0671

MACHINERY
Wrapping Machine
See 0697

MACHINES
Machine with an Intermittently Rotating Table for the Performance of Work Operations
See 0671

MACHINING
Method of Precisely Modifying Predetermined Surface Layers of a Workpiece by Cluster Ion Impact Therewith
See 0810

MAGNET COILS
Apparatus for Unilateral Generation of a Homogeneous Magnetic Field
See 0319

MAGNETIC BEARINGS
Linear Magnetic Bearings
See 0670

MAGNETIC CIRCUITS
Lightweight Cladding for Magnetic Circuits
See 0266
Phanton Computer Gating System
See 0971

MAGNETIC ENERGY STORAGE
Counterpulse Railgun Energy Recovery Circuit
See 0454
Overpulse Railgun Energy Recovery Circuit
See 0473
Superconducting Magnetic Energy Storage for Asynchronous Electrical Systems
See 0480

MAGNETIC FIELDS
Rotating Squid Magnetometers and Gradiometers
See 0621

MAGNETIC FLUX
Induction Heating Gun
See 0414

MAGNETIC MATERIALS
Metallic Glass Composition
See 0805

MAGNETIC MEASUREMENT
Rotating Squid Magnetometers and Gradiometers
See 0621

MAGNETIC RESONANCE IMAGING
Use of Paramagnetic Metalloporphyrins as Contrast Agents for Tumors in NMR Imaging
See 0881

MAGNETOMETERS
Rotating Squid Magnetometers and Gradiometers
See 0621

MAGNETOSTATICS
Improved Magnetic Bias and Delay Linearity in a Magnetostatic Wave Delay Line
See 0325

MAGNETOTELLURIC SURVEYS
Method for Determining Depth and Shape of a sub-Surface Conductive Object
See 0958

Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
See 0960

MAGNETRONS
Rippled-Field Magnetron Apparatus
See 0383

MAGNETS
Method and Apparatus for the Pressing and Alignment of Radially Oriented Toroidal Magnets
See 0328

MALARIA
Immunologically Active Peptides Capable of Inducing Immunization against Malaria and Genes Encoding Therefor
See 0912

MALEATES
Stabilized Unsaturated Polyesters
See 0082

MANIPULATORS
Apparatus for Retrieving, Placing, and Stocking Trays from an Automatic Storage and Retrieval Carousel
See 0655

Double Pinch-Push Contact Insertion End-Effector
See 0663

Precision Manipulator Heating and Cooling Apparatus for Use in UHV (Ultrahigh Vacuum) Systems with Sample Transfer Capability
See 0681

MANUFACTURING
Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
See 0408

Low Noise Polycrystalline Semiconductor Resistors by Hydrogen Passivation
See 0708

MAPPING
Retinal Information Mapping System
See 0874

MASERS
Maser Cavity Servo-Tuning System
See 1009

Passive Maser Using Timesharing for Control of the Cavity and Control of the Oscillator on the Line of Stimulated Emission
See 1016

MASKING
Low Defect, High Purity Crystalline Layers Grown by Selective Deposition
See 1088

MASS FLOW
Flow Measurement Device
See 0544

Halogen Mass Flow Rate Detection System
See 1001

MASS SPECTROMETRY
Selective Detection of Species in Complex Matrices by SIMS (Secondary Ion Mass Spectrometry)
See 0029

MATCHED FILTERS
Phase Coded Pulse Expander-Compressor
See 0203

Phase-Coded Pulse Expander-Compressor
See 0205

MATERIAL FORMING
Variable Radius Lead Former
See 0691

MATERIALS HANDLING VEHICLES
Marginal Terrain Straddle-Lift Container Handler
See 1118

MATERIALS RECOVERY
Production of Lead from Sulfides
See 0961

MATRIC POTENTIAL
Method and Apparatus to Control Soil Moisture Matric Potential
See 0008

MATRIX DISPLAYS
Matrix Display Simulation
See 0371

MATRIX MATERIALS
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0048

Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0049

Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0050

MATRIX MULTIPLICATION
Advanced Cube Processor
See 1029

Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040

Triple Matrix Product Optical Processors Using Combined Time-and-Space Integration
See 0135

MEASUREMENT
Fiber Optic System for Measuring Electric Fields
See 0542

Method and Apparatus for Measuring Press Roll Clearance
See 0581

MEASURING INSTRUMENTS
Apparatus for Determining the Liquid Water Content of a Gas
See 0497

Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

Liquid Thickness Gage
See 0573

Measurement of Permittivity and Permeability of Microwave Materials
See 0576

Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers
See 0605

Precise Bearing Support Ditherer with Piezoelectric Drive Means
See 0680

MEAT
Freeze Dried Raw Meats
See 0006

Method of Making Stable Emulsified Meat Products
See 0014

MECHANICAL DEVICES
Apparatus for Mounting a Field Emission Cathode
See 0318

Connection System
See 0139

Extended Moment Arm Anti-Spin Device
See 1104

MECHANICAL PROPERTIES
Elastomer Toughened Polyimide Adhesives
See 0743

Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
See 0831

MECHANICAL TESTS
Remote Temperature-Set-Point Controller
See 0619

MECHANICAL VIBRATIONS
Method for Controlling the Viscosity of Siloxane Oils
See 0842

MEDICAL EQUIPMENT
Guided Trephine Samples for Skeletal Bone Studies
See 0858

Helical Coil for Diathermy Apparatus
See 0859

Improved Toposcopic Catheter and Method of Fabrication
See 0861

Integrated Wheelchair and Ambulator
See 0863

Medical Apparatus
See 0865

Portable Reclining Examination Chair
See 0873

Ultrasonic Therapy Applicator That Measures Dosage
See 0880

Vibration Dosimeter
See 0882

MELANOMAS
Indium-111 Labeled Anti-Melanoma Monoclonal Antibodies
See 0914

Palladium-109 Labeled Anti-Melanoma Monoclonal Antibodies
See 0934

MELTING
Hot Melt Adhesive Attachment Pad
See 0745

MELTING POINTS
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

MELTS (CRYSTAL GROWTH)
Process and Apparatus for Growing a Crystal Ribbon
See 0034

Ribbon Growing Method and Apparatus
See 0436

Total Immersion Crystal Growth
See 1097

MEMBRANES
Humidity Sensing and Measurement Employing Halogenated Organic Polymer Membranes
See 0555

Improved Polyethylene Glycol (PEG) Reagent
See 0913

Membrane Processes for Separation of Organic Acids from Kraft Black Liquors
See 0841

Method for Reducing Sodium Content and Simultaneously Increasing Potassium Content of a Food
See 0012

MEMORY DEVICES
Dual Drain MOSFET Detector for Crosstie Memory Systems
See 0125
Two Carrier Dual Injector Apparatus
See 0354

MEMORY(COMPUTERS)
Automatic Multi-Banking of Memory for Microprocessors
See 0120

METAL BONDING
Impacting Device for Testing Insulation
See 0557

METAL COATINGS
Corrosion Resistant Coating
See 0800

METAL COMPOUNDS
Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828
Phthalocyanine Polymers
See 0068

METAL FILMS
Fire Blocking Systems for Aircraft Seat Cushions
See 1105
Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
See 0408
Method for Bonding Insulator to Insulator
See 0747
Method for the Deposition of High-Quality Crystal Epitaxial Films of Iron
See 1092
Photoionization Technique for Growth of Metallic Films
See 0719

METAL IONS
Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
See 0831

METAL MATRIX COMPOSITES
Arc Spray Fabrication of Metal Matrix Composite Monotape
See 0772
Metallographic Preparation of Particulate Filled Aluminum Metal Matrix Composite Material
See 0783
Titanium Metal-Matrix Composites
See 0788

METAL OXIDES
Improved Thermal Barrier Coating System
See 0761
Thermal Barrier Coating System
See 0771

METAL SHEETS
Curved Cap Corrugated Sheet
See 1102

METAL SURFACES
Ion-Beam Nitriding of Steels
See 0707

METAL VAPOR LASERS
High Power Metal Vapor Laser
See 1004

METALLIC GLASSES
Metallic Glass Composition
See 0805

METALLIZING
Metallized Synthetic Cable
See 0372
Overlay Metallic-Cermet Alloy Coating Systems
See 0763
Process to Produce Fine Line Metallic Collection Patterns on Semiconductors Devices
See 0815

METALLOGRAPHY
Metallographic Preparation of Particulate Filled Aluminum Metal Matrix Composite Material
See 0783

METALLOPORPHYRINS
Use of Paramagnetic Metalloporphyrins as Contrast Agents for Tumors in NMR Imaging
See 0881

METALLURGY
Method for Making Alloy Additions to Base Metals Having Higher Melting Points
See 0807

METALS
Alloys and Method of Making
See 0796
Corrosion Inhibitor Formulation for Molybdenum, Tungsten and Other Metals
See 0799
Insulation Bonding Test System
See 0565
Liquid Crystal Non-Destructive Inspection of Metals
See 0570
Method and Apparatus for Conducting Variable Thickness Vapor Deposition
See 0806
Method for Making Alloy Additions to Base Metals Having Higher Melting Points
See 0807
Optimizing Hot Workability and Controlling Microstructures in Difficult to Process High Strength and High Temperature Materials
See 0812
Porous Metallic Bodies
See 0814

METAPHIT
Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058

METASTABLE IONIZATION DETECTORS
Modulated Voltage Metastable Ionization Detector
See 0593

METASTABLE STATE
Modulated Voltage Metastable Ionization Detector
See 0593

METEOROLOGICAL INSTRUMENTS
Echometry Device and Method
See 0528
Fall Velocity Indicator/Viewer
See 0535
Snow Scale/Rate Meter
See 0626

METEOROLOGICAL RADAR
Method and Apparatus for Four-Beam Radar
See 0200

METHACRYLIC ACID+(TRIBUTYLSTANNYL-ESTER)
Process for Preparation of Crosslinked Poly(tri-n-butyltin) Methacrylate with Simultaneous Particle Size Reduction
See 0076

METHANE
Electrochemical Methane Sensor
See 0530
Improved Catalysts for Carbon and Coal Gasification
See 0389
Optical Waveguide Sensor for Methane Gas
See 0603
Portable Remote Laser Sensor for Methane Leak Detection
See 0611
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

METHANOL
Low Temperature Catalyst System for Methanol Production
See 0390
Low Temperature Catalysts and Process for Methanol Production
See 0391

MICROBIOLOGY
Flow Through Bacteria Detection System
See 0856

MICROCIRCUITS
Method of Characterizing Critical Timing Paths and Analyzing Timing Related Failure Modes in Very Large Scale Integrated Circuits
See 0588

MICROELECTRONICS
Method for Ultrasonic Bonding to Soft Microelectronic Substrates
See 0715

MICROHARDNESS
Ion-Beam Nitriding of Steels
See 0707

MICROORGANISMS
Flow Through Bacteria Detection System
See 0856

MICROPHONES
Carbon Granule Probe Microphone for Leak Detection
See 0509

MICROPROCESSORS
Automatic Multi-Banking of Memory for Microprocessors
See 0120

MICROSCOPES
Method of Examining Microcircuit Patterns
See 0344

MICROSTRUCTURE
Method for Refining Microstructures of Cast Titanium Articles
See 0809

MICROWAVE AMPLIFIERS
Combined Microwave Parallel Amplifier-RF Attenuator/Modulator
See 0242

MICROWAVE ANTENNAS
ECM Multiple-Target Retrodirective Antenna
See 0224

MICROWAVE COMMUNICATIONS
Integrated Defense Communications System Antijamming Antenna System
See 0226

MICROWAVE COUPLING
Maser Cavity Servo-Tuning System
See 1009

MICROWAVE EQUIPMENT
Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564
Slow Wave Circuit with Shaped Dielectric Substrate
See 0291

MICROWAVE FILTERS
Dual Mode Directionally Coupled Band Reject Filter Apparatus
See 0249

MICROWAVE OSCILLATORS
Coherent Array of Josephson Oscillators with External Bias Leads
See 0241
Dielectric Resonator
See 0322
Filter Reflection Image Guide Oscillator and Solid State Line Scanning Device
See 0254
Integrated Varactor Tuned Coaxial Gunn Oscillator for 60 GHz Operation
See 0265

MICROWAVE OVENS

Optical Injection Locking of Solid-State Oscillators by Frequency-Multiplexed Injection-Locked, Laser Diodes
See 0377

MICROWAVE OVENS

Microwave Drying of Ammonium Perchlorate Grinding Spheres
See 0718

MICROWAVE PERMITTIVITY

Measurement of Permittivity and Permeability of Microwave Materials
See 0576

MICROWAVES

Beam Forming Network
See 0218

MILK

Spectrophotometric Method for Simultaneously Analyzing Protein and Fat Contents in Milk
See 0024

MILLIMETER WAVES

Filter Reflection Image Guide Oscillator and Solid State Line Scanning Device
See 0254

MINE GASES

Remote Sequential Gas Sampler for Blasting Areas
See 0618

MINE SAFETY

Remote Sequential Gas Sampler for Blasting Areas
See 0618

MINERAL DEPOSITS

Production of Lead from Sulfides
See 0961

MINES(EXCAVATIONS)

Method of Enhancing the Removal of Methane Gas and Associated Fluids from Mine Boreholes
See 0959

MINIATURE ELECTRONIC EQUIPMENT

Miniature Electrooptical Air Flow Sensor
See 0591

MINING

Longwall Shearer Tracking System
See 0956

Shuttle Car Loading System
See 0965

MINING EQUIPMENT

Universal Ripper Miner
See 0966

MINORITY CARRIERS

Method and Apparatus for Measuring Minority Carrier Lifetime in a Direct Band-Gap Semiconductor
See 0580

MIRRORS

Dual Band, Low Sidelobe, High Efficiency Mirror Antenna
See 0222

Dual-Secondary Mirror Cassegrain Optical System
See 1037

Fine Figuring Actuator
See 1041

High Energy Laser Mirror
See 1002

Low Sidelobe, High Efficiency Mirror Antenna with Twist Reflector
See 0229

Method of Bonding Silver to Glass and Mirrors Produced According to This Method
See 0717

Mirror Actuator Control System
See 0176

Reduction of Signal Modulation Caused by Polarization in Visible Optical Scanning Systems
See 0180

Silicon Nitride Protective Coatings for Silvered Glass Mirrors
See 0769

Unstable Optical Resonator with Cancelling Edge Waves
See 1079

Wavelength Multiplexer-Demultiplexer
See 0117

Wide-Angle Flat Field Telescope
See 1080

MIT RADAR

Method and Means for Providing Frequency Agile Operation of MTI (Moving Target Indicator) Radar
See 0201

MIXERS(ELECTRONICS)

Coherent Receiver Phase and Amplitude Alignment Circuit
See 0093

Switching Mixer
See 0293

MIXING

Optical Injection Locking of Solid-State Oscillators by Frequency-Multiplexed Injection-Locked, Laser Diodes
See 0377

MIXTURES

High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

MODE LOCKED LASERS

Optical Injection Locking of Solid-State Oscillators by Frequency-Multiplexed Injection-Locked, Laser Diodes
See 0377

MODULATION

Modulated Voltage Metastable Ionization Detector
See 0593

RF Laser Array Driver Apparatus
See 1020

MODULATORS

Combined Microwave Parallel Amplifier-RF Attenuator/Modulator
See 0242

Detection of Angular Modulated Electromagnetic Signals
See 0191

Miniature High Performance Pulsed Modulator Apparatus
See 0272

MODULES(ELECTRONICS)

Electronic Module Insertion and Retraction Mechanism
See 0664

MOISTURE

Moisture Absorbing Anti-Arcing Coating and Method For Applying Same
See 0762

Trace Water Sensor
See 0643

MOISTURE CONTENT

Apparatus for Determining the Liquid Water Content of a Gas
See 0497

Humidity Sensing and Measurement Employing Halogenated Organic Polymer Membranes
See 0555

Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

Moisture Content and Gas Sampling Device
See 0594

MOISTURE GAGES

Fiber Optic Moisture Sensor
See 0540

MOISTURE METERS

Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

MOISTURE RESISTANCE

Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785

MOLECULAR BEAMS

Heat Pipe Oven Molecular Beam Source
See 0550

MOLECULAR SPECTRA

Correlation Spectrometer Having High Resolution and Multiplexing Capability
See 0515

MOLTEN CARBONATE FUEL CELLS

Electrolyte Reservoir for Carbonate Fuel Cells
See 0457

Fuel Cell Electrode and Method of Preparation
See 0459

Fuel Cell Separator with Compressible Sealing Flanges
See 0462

Integrated Current Collector and Catalyst Support
See 0464

Method of Preparing Thin Porous Sheets of Ceramic Material
See 0845

Molten Carbonate Fuel Cell Separator
See 0469

MOLYBDATES

Method of Distributing Liquefaction Catalysts in Solid Carbonaceous Material
See 0395

MONITORS

Battery Charger
See 0448

Battery Control and Fault Detection Method
See 0449

Focal Plane Array Optical Proximity Sensor
See 1042

Hardward Interpreter for Finite State Automata
See 0098

High Pressure Liquid Level Monitor
See 0552

Laser Schlieren Crystal Monitor
See 0568

Retinally Stabilized Differential Resolution Television Display
See 0181

Rotating Tool Wear Monitoring Apparatus
See 0684

MONOCLONAL ANTIBODIES

Human SCLC (Small Cell Lung Cancer) Autocrine Growth Factors and Monoclonal Antibody Blocking the Same
See 0909

Indium-111 Labeled Anti-Melanoma Monoclonal Antibodies
See 0914

Monoclonal Antibodies Against Chlamydial Genus Specific Lipopolysaccharide
See 0890

Monoclonal Antibodies Reactive with Human Breast Cancer
See 0927

Monoclonal Antibodies to Epizootic Hemorrhagic Disease Virus Antigen
See 0928

Monoclonal Antibodies to Porcine Immunoglobulins
See 0929

Palladium-109 Labeled Anti-Melanoma Monoclonal Antibodies
See 0934

Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
See 0938

Therapeutic and Diagnostic Monoclonal Antibody Specific for Human T-Cell Leukemia Virus Type 1 Envelopes Protein
See 0950

MONOLITHIC STRUCTURES(ELECTRONICS)
Normal Coordinate Monolithic Crystal Filter
See 0335

MONOMERS
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766

MONOPOLE ANTENNAS
Compact Wideband Multiple Conductor Monopole Antenna
See 0220

MONOPULSE RADAR
Conformal Phased Array Antenna Pattern Corrector
See 0190
Phase only Adaptive Nulling in a Monopulse Antenna
See 0204
Radar Calibration Using Direct Measurement Equipment and Oblique Photometry
See 0211

MORPHINAN + DIHYDROXY-EPOXY-FLUORO-METHYL
Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

MOSFET SEMICONDUCTORS
Dual Drain MOSFET Detector for Crosstie Memory Systems
See 0125

MOTION
Random Pattern Tracking Acceleration Tolerance Tester
See 0615

MOTORS
Gas Recirculator for Acyclic Machines
See 0308

MOUNTING
Model Mount System for Testing Flutter
See 0592

MOUNTS
Electronic Module Insertion and Retraction Mechanism
See 0664
Gyro Sensor Block Suspension
See 0970

MOVING TARGET INDICATORS
Adaptive MTI (Moving Target Indicator) System
See 0186
Interference Suppressor for Radar MTI
See 0196
Method and Means for Providing Frequency Agile Operation of MTI (Moving Target Indicator) Radar
See 0201

MULTICONDUCTOR CABLES
Multiconductor Flat Cable
See 0375

MULTIPLE BEAM ANTENNAS
Method and Apparatus for Four-Beam Radar
See 0200
Radio Frequency Lens Antenna
See 0233

MULTIPLE BEAMS(RADIATION)
Method and Apparatus for Generating a Structured Light Beam Array
See 1055

MULTIPLEXING
Correlation Spectrometer Having High Resolution and Multiplexing Capability
See 0515
Extracting Digital Data from a Bus and Multiplexing It with a Video Signal
See 0978
Integrated Wavelength Demultiplexer
See 0369
LDV(Lase Doppler Velocimeter) Multiplexer Interface
See 0100
Wavelength Multiplexer-Demultiplexer
See 0117

MULTIPLICATION
Triple Matrix Product Optical Processors Using Combined Time-and-Space Integration
See 0135

MUTAGENESIS
Process for Site-Specific Mutagenesis without Phenotypic Selection
See 0939

N-REACTOR
On-Line Temperature Sensor
See 0601

NACELLES
Over the Wing Propeller
See 1110

NADIMIDE
Chemical Control of Nadimide Cure Temperature and Rate
See 0818

NALOXONE
Narcotic Antagonists in the Therapy of Shock
See 0891

NARCOTICS
Narcotic Antagonists in the Therapy of Shock
See 0891

NATURAL GAS WELLS
Wireless Remote Liquid Level Detector and Indicator for Well Testing
See 0967

NAVIGATION COMPUTERS
Phanton Computer Gating System
See 0971

NEEDLE HOLDERS
Suture Needle Holder
See 0878

NEEDLES
Suture Needle Holder
See 0878

NEOPLASMS
Substantially Purified Tumor Growth Inhibitory Factor (TIF)
See 0895

NICKEL
Low Temperature Deposition of Nickel Films
See 0709
Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057
Suspension Method of Impregnating Active Material into Composite Nickel Plaque
See 0787

NICKEL ALLOYS
Long Range Ordered Alloys Modified by Addition of Niobium and Cerium
See 0803

NICKEL BASE ALLOYS
Metallic Glass Composition
See 0805

NICKEL CADMIUM BATTERIES
Nickel-Cadmium Battery Conditioner and Tester Apparatus
See 0471

NICKEL CHROMIUM ALLOYS
Process and Bath for Electroplating Nickel-Chromium Alloys
See 0722

NICKEL-ZINC BATTERIES
Secondary Battery Containing Zinc Electrode with Modified Separator and Method
See 0478

NIGHT VISION DEVICES
Night Vision Compatible Illumination for Vehicle Crewmember Workspace
See 0419

NIOBIUM BASE ALLOYS
Aluminum-Stabilized Nb sub 3 Sn Superconductor
See 0798

NIOBIUM TIN
Aluminum-Stabilized Nb sub 3 Sn Superconductor
See 0798

NITRIDING
Ion-Beam Nitriding of Steels
See 0707

NITRILES
Epoxy Phthalonitrile Polymers
See 0822

NITROGEN COMPOUNDS
Preparation of Simple Nitronium Salts
See 0075
Synthesis of Geminal Dinitro Compounds
See 0085

NITROGEN OXIDE LASERS
Improved Operation of Transversely Exited N2O Lasers
See 1006

NITRONIUM SALTS
Preparation of Simple Nitronium Salts
See 0075

NOISE GENERATORS
Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

NOISE REDUCTION
Comparator with Noise Suppression
See 0243
Phase Sensitive Guidance Sensor for Wire-Following Vehicles
See 0972

NONDESTRUCTIVE TESTING
Ferromagnetic Resonance Probe Liftoff Suppression Apparatus
See 0538
Liquid Crystal Non-Destructive Inspection of Metals
See 0570

NONDESTRUCTIVE TESTS
Insulation Bonding Test System
See 0565
Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
See 0578
Method and Apparatus for Measuring Minority Carrier Lifetime in a Direct Band-Gap Semiconductor
See 0580

NONFLAMMABLE MATERIALS
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

NOSE TIPS
Circumferentially Wrapped Carbon-Carbon Structure
See 0773
Erosion-Resistant Nosetip Construction
See 0777
Erosion-Resistant Nosetip Construction
See 0778

NOZZLES
Delta Wing Nozzle Assembly for Chemical Lasers
See 0994

NUCLEAR REACTORS

Nozzle for Self-Contained Cutting Torches
See 0676

NUCLEAR REACTORS

High Thermal Power Density Heat Transfer Apparatus Providing Electrical Isolation at High Temperature Using Heat Pipes
See 0412

NUTS(FASTENERS)

Tube Coupling Device
See 0159

NYLON

Piezoelectric Transducer Using Electrically Poled Gamma-Phase Nylon 11
See 0829

OCCUPATIONAL SAFETY AND HEALTH

Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0794

OCEAN CURRENTS

Method and Apparatus for Delta Kappa Synthetic Aperture Radar Measurement of Ocean Current
See 0199

OCEAN DATA ACQUISITIONS SYSTEMS

Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
See 0589

OCEAN TEMPERATURE

Echometry Device and Method
See 0528

Expendable Bathythermograph for Measuring Light Attenuation and Temperature Below the Ocean Surface
See 0731

OCEANOGRAPHIC EQUIPMENT

Echometry Device and Method
See 0528

Remote Self-Contained Undersea Monitor
See 0736

OHMIC CONTACTS

TiW Diffusion Barrier for AuZn Ohmic Contacts to P-Type InP
See 0353

OIL RECOVERY

Solar-Heated Oil Shale Retort
See 0442

OIL SHALE

Shale Oil Dearsenation Process
See 0399

OIL WELLS

Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
See 0960

Wireless Remote Liquid Level Detector and Indicator for Well Testing
See 0967

OINTMENTS

Topical Prophylaxis against Schistosomal Infections
See 0025

OLEATIC ACID+(BUTOXY PROPYL-ESTER)(HYDROXY-ESTER)

Propellant Plasticizer
See 0077

OPEN CHANNEL FLOW

Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417

OPTICAL COMMUNICATIONS

Optical Non-Line-of-Sight Covert, Secure High Data Communication System
See 0105

Synchronization Tracking in Pulse Position Modulation Receiver
See 0112

OPTICAL CORRELATORS

Double Pinhole Spatial Phase Correlator Apparatus
See 1036

Optical Correlator
See 1060

OPTICAL COUPLING

Holographic Directional Coupler for Fiber Optic Systems
See 1046

Optical Fiber Coupling Method and Apparatus
See 1061

OPTICAL DENSITY

Laser Schlieren Crystal Monitor
See 0568

OPTICAL DETECTION

Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
See 0585

OPTICAL DETECTORS

Fiber Optic Sensors Operating at DC
See 0541

Optical Fibers with Reduced Pressure Sensitivity to High Frequency Acoustic Field
See 1062

Optical Sensing Devices
See 0178

Optical Waveguide Sensor for Methane Gas
See 0603

Optical 3-D Signature Device for Detecting Chemical Agents
See 0604

Thermal Sensor with an Improved Coating
See 0184

OPTICAL DISKS

Optical Disc Transport System
See 0980

OPTICAL EQUIPMENT

Automatic Pattern Recognition Apparatus
See 0357

Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662

Interface Alignment System
See 1048

Optical System
See 1065

Spatial Light Modulator Having a Capacitively Coupled Photoconductor
See 1068

Test Target for Adaptive Optics
See 1074

Triple Matrix Product Optical Processors Using Combined Time-and-Space Integration
See 0135

OPTICAL EQUIPMENT COMPONENTS

Length Dependent, Optical Time Delay/Filter Device for Electrical Signals
See 0370

Technique to Reduce Scattered Light in Optical Systems
See 1072

OPTICAL FIBERS

Temperature-Insensitive Optical Fibers
See 1073

OPTICAL FILTERS

Acoustically Tuned Optical Filter System
See 1028

Bandpass Filter Formed by Serial Gratings Operating in a Wood's Anomaly Region
See 1030

Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
See 1047

Length Dependent, Optical Time Delay/Filter Device for Electrical Signals
See 0370

Mode Dependent, Optical Time Delay System for Electrical Signals
See 0374

Portable Reflectance Spectrometer
See 0610

OPTICAL IMAGES

Retinal Information Mapping System
See 0874

OPTICAL INSTRUMENTS

Optical System for Measuring Shadowgraph Data
See 0179

OPTICAL INTERFEROMETERS

Fiber Optic System for Measuring Electric Fields
See 0542

Laser Vibrometer
See 0569

Phase-Lock Fiber Optic Interferometer
See 0607

Turbulence Measurement Interferometer Apparatus
See 0646

OPTICAL MEASUREMENT

Portable Reflectance Spectrometer
See 0610

OPTICAL MEASURING INSTRUMENTS

Vibration-Free Raman Doppler Velocimeter
See 0651

OPTICAL PROCESSING

Advanced Cube Processor
See 1029

Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040

Fly's Eye Sensor Nonlinear Signal Processing
See 0546

High Accuracy Digital Acousto-Optic Matrix Computer
See 1044

Spatial Frequency Multiplexed Coherent Optical Processor for Calculating Generalized Moments
See 1067

Triple Matrix Product Optical Processors Using Combined Time-and-Space Integration
See 0135

OPTICAL PROPERTIES

Method of Measuring Spherical Aberration and Apparatus Therefor
See 1057

OPTICAL PUMPING

Exploding Conducting Film Laser Pumping Apparatus
See 0998

Optically Pumped Iodine Monofluoride Laser
See 1014

OPTICAL RADAR

Dual Mode Scanner/Tracker
See 0170

Optical Radar Transceiver Control Apparatus
See 0177

OPTICAL RESONATORS

Unstable Optical Resonator with Cancelling Edge Waves
See 1079

OPTICAL SCANNING

Dual Mode Scanner/Tracker
See 0170

Optical Mark Reader
See 1063

Reduction of Signal Modulation Caused by Polarization in Visible Optical Scanning Systems
See 0180

OPTICAL STORAGE

Optical Disc Transport System
See 0980

OPTICAL SWITCHES
Electro-Optic Harmonic Conversion to Switch a Laser Beam Out of a Cavity
See 1038
Transparent Electrode for Optical Switch
See 1076

OPTICAL TRACKING
Longwall Shearer Tracking System
See 0956
Retinally Stabilized Differential Resolution Television Display
See 0181

OPTOACOUSTIC FILTERS
Tunable Acousto-Optic Filter with Improved Spectral Resolution and Increased Aperture
See 1077

OPTOMETERS
Measurement of Visual Contrast Sensitivity
See 0922

ORE TREATMENT
Production of Lead from Sulfides
See 0961

ORGANIC ACIDS
Membrane Processes for Separation of Organic Acids from Kraft Black Liquors
See 0841

ORGANIC COMPOUNDS
Synthesis of Geminal Dinitro Compounds
See 0085

ORGANIC HALOGEN COMPOUNDS
Method for Removing Chlorine Compounds from Hydrocarbon Mixtures
See 0393

ORGANIC PHOSPHORUS COMPOUNDS
Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055

ORGANIC POLYMERS
Electron-Donor Dopant, Method of Improving Conductivity of Polymers by Doping Therewith, and a Polymer So Treated
See 0821
Radiation-Hardened Polymeric Films
See 0834

ORGANOMETALLIC COMPOUNDS
Variable Temperature Trap
See 0650

OSCILLATION DAMPERS
Variable Force, Eddy-Current or Magnetic Damper
See 0690

OSCILLATORS
Dielectric Resonator Oscillators with Digital Temperature Compensation
See 0246
Integrated Circuit Tunable Cavity Oscillator
See 0264
Integrated Dual Beam Line Scanning Antenna and Negative Resistance Diode Oscillator
See 0227
Temperature Sensitive Oscillator
See 0296
Transistor Oscillator/Doubler
See 0297

OSTEOCLASTS
Osteoclast for Whole Bone Testing
See 0870

OUTLET FLOW
Continuous Laminar Smoke Generator
See 0514

OXIDATION
Overlay Metallic-Cermet Alloy Coating Systems
See 0763
Process for Improving the Quality of Epitaxial Silicon Films Grown on Insulating Substrates
See 0723
Selective Anodic Oxidation of Semiconductors for Pattern Generation
See 0351

OXIDE FILMS
Improved Thermal Barrier Coating System
See 0761
New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434

OXYGEN
Oxygen Analyzer
See 0606
System for Controlling the Oxygen Content of a Gas Produced by Combustion
See 0634

OXYGEN EQUIPMENT
Light-Weight Oxygen Delivery Hood Assembly for Hyperbaric Chamber
See 0864

P-N JUNCTIONS
New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434

P TYPE SEMICONDUCTORS
Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
See 1085

PACKAGING
Device for Simulating Stress on Packages during Coupling of Railcars
See 0519

PACKET TRANSMISSION
Multicomputer Communication System
See 0103

PADS(CUSHIONS)
Lateral Support System for Canister-Launched Missile
See 0746

PAINTS
Diffusely Reflecting Paints Including Polytetrafluoroethylene and Method of Manufacture
See 0759

PALLADIUM 109
Palladium-109 Labeled Anti-Melanoma Monoclonal Antibodies
See 0934

PANELS
Saltless Solar Pond
See 0438

PARALLEL PROCESSING
Scanning Alarm Electronic Processor
See 0623

PARASITES
Lysis of 'Trypanosoma Cruzi'
See 0921

PARASITIC DISEASES
Diagnostic Reagent for Swine Trichinosis
See 0005
Monoclonal Antibodies to Epizootic Hemorrhagic Disease Virus Antigen
See 0928

PARTIAL PRESSURE
Technique for Measuring Gas Conversion Factors
See 0636

PARTICLES
Acoustic Particle Separation
See 0030
Improved Silicon Grinding Method and Apparatus
See 0706

PARTICULATES
Fluidizing Device for Solid Particulates
See 0666
Oxygen Analyzer
See 0606
Sub-Micron Particle Sampler Apparatus and Method for Sampling sub-Micron Particles
See 0632

PASSIVE SONAR
Tactical Expendable Device
See 0166

PASSIVE SYSTEMS
Apparatus for Locating Passive Intermodulation Interference Sources
See 1083
Electronically Controlled Array for Simulation of Passive Target/Background Signatures at Millimeter Wavelengths
See 0193

PAT-CL-416-220
High Pressure Turbine Rotor Two-Piece Blade Retainer
See 0145

PAT-CL-424-10
Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
See 0884

PATENTS APPLICATIONS
Temperature Adaptable Textile Fibers and Method of Preparing Same
See 0795

PATTERN RECOGNITION
Spatial Frequency Multiplexed Coherent Optical Processor for Calculating Generalized Moments
See 1067

PATTERN RECOGNITION DEVICES
Automatic Pattern Recognition Apparatus
See 0357

PEPTIDE HORMONES
Rapid Bioassay and a Kit for Peptide Hormones
See 0944

PEPTIDES
Immunologically Active Peptides Capable of Inducing Immunization against Malaria and Genes Encoding Therefor
See 0912
Silver Stains for Protein in Gels-A Modified Procedure
See 0947
Synthetic Peptides for the Production of Specific Keratin Proteins
See 0087

PERMANENT MAGNET GENERATORS
Wave Powered Buoy Generator
See 0739

PERMEABILITY
Measurement of Permittivity and Permeability of Microwave Materials
See 0576
Method and Apparatus for Measuring the Gas Permeability of a Solid Sample
See 0582

PERMITTIVITY
Measurement of Permittivity and Permeability of Microwave Materials
See 0576

PEST CONTROL
Method and Composition for Luring Coyotes
See 0923
Method for Screening Bacteria and Application Thereof for Field Control of Pythium spp. on Small Grain Crops
See 0013
Preparation of Pellets Containing Fungi and Nutrient for Control of Soilborne Plant Pathogens
See 0935
Rope Wick Applicator
See 0022
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

PH FACTOR
Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586

PHARMACOLOGICAL ANTAGONISTS
Narcotic Antagonists in the Therapy of Shock
See 0891

PHASE
Improved Magnetic Bias and Delay Linearity in a Magnetostatic Wave Delay Line
See 0325

PHASE CONTROL
Method and Apparatus for Self-Calibration and Phasing of Array Antenna
See 0230

PHASE DETECTORS
Analog to Digital Converter
See 0237
Apparatus and Method for Determining the Phase Sensitivity of Hydrophones
See 1081
Double Reference Pulsed Phase Locked Loop (Drp-2L-2)
See 0096
Maser Cavity Servo-Tuning System
See 1009

PHASE LOCKED SYSTEMS
Apparatus for Non-Destructive Inspection of Blind Holes
See 0500
Dielectric Resonator Stabilized Microstrip Oscillator
See 0247
Double Reference Pulsed Phase Locked Loop (Drp-2L-2)
See 0096
Phase Lock Acquisition System
See 0275
Phase-Lock Fiber Optic Interferometer
See 0607
Sample Data Phase Locked Loop for Adaptive Doppler Tracker
See 0285

PHASE MODULATION
Amplitude and Phase Modulation in Fin-Lines Electrical Tuning
See 0355
P1 Polyphase Code Expander-Compressor
See 0209

PHASE SHIFT
Double Reference Pulsed Phase Locked Loop (Drp-2L-2)
See 0096

PHASE SHIFT CIRCUITS
Low Sidelobe Phased Array Antenna System
See 0198
Wavelength Multiplexer-Demultiplexer
See 0117

PHASED ARRAY ANTENNA SYSTEM
Low Sidelobe Phased Array Antenna System
See 0198

PHASED ARRAYS
Conformal Phased Array Antenna Pattern Corrector
See 0190
Dual Sense, Circularly Polarized Helical Antenna
See 0223
Low Sidelobe Phased Array Antenna System
See 0198
Method and Apparatus for Self-Calibration and Phasing of Array Antenna
See 0230
Method for Tuning a Phased Array Antenna
See 0231
Phase only Adaptive Nulling in a Monopulse Antenna
See 0204
Phased Antenna Array for Wind Profiling Applications
See 0206

PHENCYCLIDINE
Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058

PHENYLETHYNYL GROUPS
Thermally Stable Thermoset Resin Compositions
See 0837

PHEROMONES
Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052

PHOSPHAZENE
(Vinyloxy)Chlorocyclotriphosphazenes
See 0040

PHOSPHINES
Phosphorus-Containing Imide Resins
See 0067

PHOSPHORIC ACIDS
Granulation of Urea Phosphate from Urea and Merchant-Grade Phosphoric Acid
See 0007
Production of High-Analysis Ammonium Orthophosphate Suspension Fertilizers by a New Batch-Type Process
See 0020

PHOSPHORUS
Fire-Resistant Phosphorus Containing Polyimides and Copolyimides
See 0825

PHOSPHORUS POLYMERS
Phosphorus-Containing Imide Resins
See 0067

PHOTOCONDUCTORS
Spatial Light Modulator Having a Capacitively Coupled Photoconductor
See 1068

PHOTODECOMPOSITION
Photoionization Technique for Growth of Metallic Films
See 0719

PHOTODIODES
Focal Plane Array Optical Proximity Sensor
See 1042
Reversible Optical Waveguide Vapor Sensor
See 0620

PHOTOELECTRIC CELLS
Method and Apparatus for Measuring Areas of Photoelectric Cells and Photoelectric Cell Performance Parameters
See 0579

PHOTOELECTRIC MATERIALS
Increased Voltage Photovoltaic Cell
See 0432

PHOTOELECTROCHEMICAL CELLS
Polymer Blends for Use in Photoelectrochemical Cells for Conversion of Solar Energy to Electricity
See 0435
Stable n-CuINSe/sub 2/Iodide-Iodine Photoelectrochemical Cell
See 0444

PHOTOELECTROCHEMICAL DEVICES
Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586

PHOTOGRAMMETRY
Radar Calibration Using Direct Measurement Equipment and Oblique Photometry
See 0211

PHOTOGRAPHIC DATA LINKS
Photo-Reconnaissance System
See 0982

PHOTOGRAPHIC RECONNAISSANCE
Photo-Reconnaissance System
See 0982

PHOTOGRAPHY
Photorefractor Ocular Screening System
See 0871

PHOTOLITHOGRAPHY
Integrated Wavelength Demultiplexer
See 0369

PHOTOMICROGRAPHY
Method of Examining Microcircuit Patterns
See 0344

PHOTON-ELECTRON INTERACTION
Means and Method for Calibrating a Photon Detector Utilizing Electron-Photon Coincidence
See 0174

PHOTONS
Double Photon Excitation of High-Rydberg Atoms as a Long-Lived Submillimeter Detector
See 0169

PHOTOSENSITIVITY
Liquid Crystal Light Valve Structures
See 1052

PHOTOVOLTAIC CELLS
Increased Voltage Photovoltaic Cell
See 0432
Method and Apparatus for Measuring Areas of Photoelectric Cells and Photoelectric Cell Performance Parameters
See 0579
Process and Apparatus for Growing a Crystal Ribbon
See 0034
Thermionic Photovoltaic Energy Converter
See 0445

PHOTOVOLTAIC EFFECT
Thermionic Photovoltaic Energy Converter
See 0445

PHTHALATES
Epoxy Phthalonitrile Polymers
See 0822
Stabilized Unsaturated Polyesters
See 0082

PHTHALOCYANINE + TETRAAMINO
Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828
Phthalocyanine Polymers
See 0068

PHTHALOCYANINES
Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828
Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057
Phthalocyanine Polymers
See 0068

PIEZOELECTRIC CRYSTALS
Cut Angles for Quartz Crystal Resonators
See 0320
Microwave Resonator Using Lateral Excitation
See 0332
Normal Coordinate Monolithic Crystal Filter
See 0335
Stress Compensation Crystal Device
See 0337

PIEZOELECTRIC MATERIALS
Piezoelectric Polymer Heat Exchanger
See 0422
Transversely Reinforced Piezoelectric Composites
See 0789

PIEZOELECTRIC TRANSDUCERS
Lightweight, Broadband Rayleigh Wave Transducer
See 0327
Piezoelectric Deicing Device
See 1112
Piezoelectric Transducer Using Electrically Poled Gamma-Phase Nylon 11
See 0829
Precise Bearing Support Ditherer with Piezoelectric Drive Means
See 0680

PILOTS
Servo Operated Anti-G Suit Pressurization System
See 0876

PINHOLE CAMERAS
Three-Dimensional and Tomographic Imaging Device for X-ray and gamma-Ray Emitting Objects
See 0640

PIPE FLOW
Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417

PIPELINING(COMPUTERS)
Arithmetic Pipeline for Image Processing
See 0119
Pipelined Digital SAR Azimuth Correlator Using Hybrid FFT-Transversal Filter
See 0207

PIPES(TUBES)
Improved Fluid Flow Meter for Measuring the Rate of Fluid Flow in a Conduit
See 0560

PISTONS
Lightweight Piston
See 0782

PLASMA DENSITY
Hollow Cathode Apparatus
See 0554

PLASMA SPRAYING
Improved Thermal Barrier Coating System
See 0761
Plasma Spray Screen Repair Method
See 0720

PLASMAS(PHYSICS)
Hollow Cathode Apparatus
See 0554

PLASMONS
Inelastic Tunnel Diodes
See 0341
Solar Energy Converter Using Surface Plasma Waves
See 0440

PLASTIC COATINGS
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766

PLASTIC FOAMS
Rigid Zeolite Containing Polyurethane Foams
See 0835

PLASTICIZERS
Azido Nitramino Ether Containing Solid Propellants
See 0042

PLATINUM COMPOUNDS
Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
See 0884

PLATINUM + (DIAMINO-CYCLOHEXYL)-TETRACHLORO
New Antineoplastic Platinum (IV) Complexes
See 0063

PLOTTING
Computer-Aided Process for Generating Camera-Ready Graphical Artwork
See 0121

PNEUMATIC ACTUATORS
Pneumatic Actuator Device
See 0487

PNEUMATIC CLAMPING DEVICE
Pneumatic Clamping Device
See 0153

PNEUMATIC EQUIPMENT
Pneumatic Clamping Device
See 0153
Tire Inflation/Deflation System
See 0490

PNEUMATIC VALVES
Pneumatic Actuator Device
See 0487

POCKELS CELLS
Total Internal Reflection Modulator/Deflector
See 1075

POLARIMETERS
Polarimetric Image Recorder
See 0983

POLARIZERS
Reduction of Signal Modulation Caused by Polarization in Visible Optical Scanning Systems
See 0180

POLARZERS
Dual Band, Low Sidelobe, High Efficiency Mirror Antenna
See 0222

POLES(SUPPORTS)
Flexible Line Support Assembly
See 0142

POLLUTION
Multiple Site Laser Excited Pollution Monitoring System
See 0597

POLLUTION MONITORING
Solid Sorbent Air Sampler
See 0629

POLYACETYLENES
Electrically Conductive Doped Block Copolymer of Polyacetylene and Polyisoprene
See 0820
Electron-Donor Dopant, Method of Improving Conductivity of Polymers by Doping Therewith, and a Polymer So Treated
See 0821

POLYACTIC ACID
Polyactic-Polyglycolic Acid Copolymer Combined with Decalcified Freeze-Dried Bone for Use as a Bone Repair Material
See 0872

POLYAMIDE RESINS
Fire and Heat Resistant Laminating Resins Based on Maleimido and Citraconimido Substituted 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diaminobenzenes
See 0823
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766
Thermoset-Thermoplastic Aromatic Polyamide Containing n-Propargyl Groups
See 0838

POLYCHLORINATED BIPHENYLS
Soil Extraction Kit
See 0627

POLYESTER PLASTICS
Fluorinated Polyesters
See 0826

POLYESTERS
Stabilized Unsaturated Polyesters
See 0082

POLYETHER RESINS
Phenoxy Resins Containing Pendent Ethynyl Groups and Cured Resins Obtained Therefrom
See 0066

POLYGLYCOLIC ACID
Polyactic-Polyglycolic Acid Copolymer Combined with Decalcified Freeze-Dried Bone for Use as a Bone Repair Material
See 0872

POLYIMIDE RESINS
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0047
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0048
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0049
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0050
Chemical Control of Nadimide Cure Temperature and Rate
See 0818
Phosphorus-Containing Imide Resins
See 0067

POLY(IMIDE SULFONE)
Process for Preparing Solvent Resistant, Thermoplastic Aromatic Poly(Imidesulfone)
See 0832

POLYIMIDES
Elastomer Toughened Polyimide Adhesives
See 0743
Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824
Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055
Fire-Resistant Phosphorus Containing Polyimides and Copolyimides
See 0825
Oxidation Protection Coatings for Polymers
See 0764
Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
See 0765
Process for Preparing Solvent Resistant, Thermoplastic Aromatic Poly(Imidesulfone)
See 0832

POLYISOPRENE
Electrically Conductive Doped Block Copolymer of Polyacetylene and Polyisoprene
See 0820

POLYMER CHEMISTRY
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0048

POLYMER PHYSICS
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

POLYMERIC FILMS
Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
See 0765
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766
Radiation-Hardened Polymeric Films
See 0834

POLYMERIZATION
Electrically Conductive Doped Block Copolymer of Polyacetylene and Polyisoprene
See 0820
Fire and Heat Resistant Laminating Resins Based on Maleimido and Citraconimido Substituted 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diaminobenzenes
See 0823

POLYMERS

Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824

Method of Synthesizing Polymers from a Solid Electrolyte
See 0062

Phenoxy Resins Containing Pendent Ethynyl Groups and Cured Resins Obtained Therefrom
See 0066

Phthalocyanine Polymers
See 0068

Polysilane Positive Photoresist Materials and Methods for Their Use
See 0830

Stabilized Unsaturated Polyesters
See 0082

POLYMERS

(Vinyloxy)Chlorocyclotriphosphazenes
See 0040

Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
See 0051

Humidity Sensing and Measurement Employing Halogenated Organic Polymer Membranes
See 0555

Method of Synthesizing Polymers from a Solid Electrolyte
See 0062

Modified Starches as Extenders for Absorbent Polymers
See 0016

Piezoelectric Polymer Heat Exchanger
See 0422

Polyaromatic Ether-Sulfone-Keytones with Fluoro-Substituted-P-Cyclophane Units as Cross-Linking Sites
See 0071

Preparation of Polymers of Functionalized Acetylenes
See 0074

Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785

Processable and Stable Conductive Polymers
See 0833

Pseudo-P-1,2,2,9,9,10,10-Octo-Fluoro(2,2)-P-Cyclophane Bis-Acid Chloride
See 0078

Synthesis of Arylene Siloxanylene Polymers and Copolymers
See 0084

POLYNUCLEOTIDES

T-Cell Receptor-Specific for Antigen Polypeptides and Related Polynucleotides
See 0949

POLYOXYETHYLENE

Improved Polyethylene Glycol (PEG) Reagent
See 0913

POLYPEPTIDES

Dimeric Enkephalins
See 0887

T-Cell Receptor-Specific for Antigen Polypeptides and Related Polynucleotides
See 0949

POLY(PHENOL + BUTYL-BENZYL)

Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxbenzenes in Insect Population Control
See 0072

POLYTETRAFLUOROETHYLENE

Diffusely Reflecting Paints Including Polytetrafluoroethylene and Method of Manufacture
See 0759

POLYUNSATURATED OILS

Polyunsaturated Fatty Acids from Fish Oils
See 0017

POLYURETHANE RESINS

Fluorinated Polyurethanes
See 0827

POLYURETHANES

Rigid Zeolite Containing Polyurethane Foams
See 0835

PORTABLE EQUIPMENT

Device and Method for Measuring the Energy Content of Hot and Humid Air Streams
See 0518

Portable Pallet Weighing Apparatus
See 0609

Portable Remote Laser Sensor for Methane Leak Detection
See 0611

PORTLAND CEMENT

Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
See 0398

POSITION FINDING

Short Range Trapped Miner Locator
See 0964

POSITION INDICATORS

Improved Legislated Emergency Locating Transmitters and Emergency Position Indicating Radio Beacons
See 1117

Synchronization Tracking in Pulse Position Modulation Receiver
See 0112

POSITIONING DEVICES(MACHINERY)

Optical Disc Transport System
See 0980

POSITION(LOCATION)

Adjustable Indicating Device for Load Position
See 0493

POSITRO EMISSION TRANSAXIAL TOMOGRAPHY

Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

POTASSIUM

Method for Reducing Sodium Content and Simultaneously Increasing Potassium Content of a Food
See 0012

POTASSIUM CARBONATES

Improved Catalysts for Carbon and Coal Gasification
See 0389

POTASSIUM CHLORIDES

Improved Catalysts for Carbon and Coal Gasification
See 0389

POWER AMPLIFIERS

Dual-Gate MESFET Variable Gain Constant Output Power Amplifier
See 0250

POWER CONDITIONING

Inelastic Tunnel Diodes
See 0341

POWER EFFICIENCY

Increased Voltage Photovoltaic Cell
See 0432

POWER ENGINEERING

Thermochemical Energy Transport Using a Hydrogen Rich Working Fluid
See 0483

POWER FACTOR CONTROLLERS

Power Control for AC Motor
See 0312

Solar Powered Actuator with Continuously Variable Auxiliary Power Control
See 0441

POWER MEASUREMENT

Simple Power Meter for High Energy Pulsed Lasers
See 1021

POWER METERS

Simple Power Meter for High Energy Pulsed Lasers
See 1021

POWER SUPPLIES

Autonomous Uninterruptable Power Supply Apparatus
See 0447

High Output Programmable Signal Current Source for Low Output Impedance Applications
See 0260

Switching Power Supply
See 0294

POWER TRANSMISSION LINES

Apparatus Producing Constant Cable Tension for Intermittent Demand
See 0656

Fault Finder
See 0537

PREPROCESSING

Adaptive Preprocessing System
See 0188

Real Time Data Smoother and Significant Values Selector
See 0134

PRESERVATIVES

Process and Compositions for Preserving Fresh Hides and Skins
See 0846

PRESSURE

Electrolytic Pressure Transduction System
See 0855

Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers
See 0605

PRESSURE EFFECTS

Structural Pressure Sensitive Silicone Adhesives
See 0753

PRESSURE GAUGES

Dynamic Polymer Pressure Transducer with Temperature Compensation
See 0526

PRESSURE MEASUREMENT

Method of and Apparatus for Measuring Temperature and Pressure
See 0587

Technique for Measuring Gas Conversion Factors
See 0636

Volumetric Fuel Quantity Gauge
See 0652

PRESSURE REDUCTION

Method for Growth of Crystals by Pressure Reduction of Supercritical or Subcritical Solution
See 1090

PRESSURE SENSORS

Fluidic Angular Velocity Sensor
See 0545

Heat Pipe Cooled Probe
See 0549

Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers
See 0605

PRESSURE SWITCHES

Volumetric Fuel Quantity Gauge
See 0652

PRESSURE TRANSDUCERS

Dynamic Polymer Pressure Transducer with Temperature Compensation
See 0526

PRESSURE TUBE REACTORS

On-Line Temperature Sensor
See 0601

PREVENTIVE MEDICINE
Topical Prophylaxis against Schistosomal Infections
See 0025

PRIMARY BATTERIES
Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451
Cathode Including a Non Fluorinated Linear Chain Polymer as the Binder, Method of Making the Cathode, and Lithium Electrochemical Cell Containing the Cathode
See 0452

PRIMERS
RF-Primed High Power Halogen Vial Apparatus
See 0213

PRINTED CIRCUIT BOARDS
Mechanical Locking between Multi-Layer Printed Wiring Board Conductors and Through-Hole Plating
See 0269

PRINTED CIRCUITS
Diagnostic Apparatus for Radar Pulse Repetition Frequency Control Circuit Card
See 0192
Heat Sinking for Printed Circuitry
See 0257
Printed Wiring Board Circuit Isolator Tool
See 0682

PRINTERS(DATA PROCESSING)
Control for Dot Matrix Printers Operating in Harsh Environment
See 0122
Dual Optical Mechanical Position Tracker
See 0097

PRINTING
Multi-Track Optical Shaft Position and Timing Cylinder
See 0979
Screen Printed Interdigitated Back Contact Solar Cell
See 0439

PRINTING EQUIPMENT
Apparatus and Circuits for Two-Color Printing in Electronic Impact Printers
See 0976
Dot Matrix Color Printer
See 0977
Optically Controlled Multi-Color Impact Printer
See 0981
Positioning of a Multicolor Ribbon
See 0984
Printing Apparatus
See 0985
Serial Impact Printer for Multicolor Printing
See 0986

PROBES
Automated Calibration Technique for Non-Field Perturbing (Electrically Small) Electromagnetic Field Sensors
See 0503
Coaxial Probe for Measuring the Current Density Profile of Intense Electron Beams
See 0512
Heat Pipe Cooled Probe
See 0549

PROBES(ELECTROMAGNETIC)
Ferromagnetic Resonance Probe Liftoff Suppression Apparatus
See 0538

PROCESS CONTROL(INDUSTRY)
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0049
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0050

PROCESS SOLUTIONS
Solvent Wash Solution
See 0038

PROCESSING EQUIPMENT
Advanced Cube Processor
See 1029
Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040
Fly's Eye Sensor Nonlinear Signal Processing
See 0546
Technique for Rapid Determination of Probability of Detection in Pulse Doppler Radars
See 0215

PRODUCTION
Improved Method and Apparatus for the Mass Rearing of Fruit Flies
See 0561
Production of High-Analysis Ammonium Orthophosphate Suspension Fertilizers by a New Batch-Type Process
See 0020

PROPAGATION VELOCITY
Double Reference Pulsed Phase Locked Loop (Drp-2L-2)
See 0096

PROPARGYL GROUPS
Thermoset-Thermoplastic Aromatic Polyamide Containing n-Propargyl Groups
See 0838

PROPULSION SYSTEMS
Small Cartridge Heater
See 0847

PROPYLENE
Rapid Production of Ispropenyl Esters
See 0079

PROSTHETICS
Metallic Aid and Technique in Fitting Voice Prosthesis
See 0866
Metallic Aid and Technique in Fitting Voice Prosthesis
See 0867

PROTECTIVE COATINGS
Corrosion Resistant Coating
See 0800
Improved Thermal Barrier Coating System
See 0761
Overlay Metallic-Cermet Alloy Coating Systems
See 0763
Oxidation Protection Coatings for Polymers
See 0764
Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
See 0765
Spray Applicator for Spraying Coatings and Other Fluids in Space
See 0687

PROTECTIVE EQUIPMENT
Protection Circuitry for High Voltage Drivers
See 0280

PROTECTIVE TREATMENTS
Passivation of Steel with Aqueous Amine Solutions
See 0813

PROTEIN
Method for Obtaining Periplasmic Proteins from Bacterial Cells Using Chloroform
See 0924
Spectrophotometric Method for Simultaneously Analyzing Protein and Fat Contents in Milk
See 0024

PROTEINS
Isoelectric Focussing-Polynucleotide/Polyacrylamide Gel Electrophoresis
See 0917
Method for Simultaneously Monitoring Turnover Rate in Multiple Proteins
See 0926
Silver Stains for Protein in Gels-A Modified Procedure
See 0947
Synthetic Peptides for the Production of Specific Keratin Proteins
See 0087

PROTOCOL(COMPUTERS)
Multicomputer Communication System
See 0103

PROXIMITY
Focal Plane Array Optical Proximity Sensor
See 1042

PSEUDO NOISE SYSTEMS
Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

PSEUDOMONAS
Pseudomonas Exotoxin Conjugate Immunotoxins
See 0941

PSYCHOMOTOR FUNCTION
Random Pattern Tracking Acceleration Tolerance Tester
See 0615

PSYCHROMETERS
Psychrometer for Measuring the Humidity of a Gas Flow
See 0613

PULSE CODE MODULATION
Method and Apparatus for Operating on Companded PCM (Pulse Code Modulation) Voice Data
See 0102
Phase Coded Pulse Expander-Compressor
See 0203
Pulse Compression System
See 0106
P1 Polyphase Code Expander-Compressor
See 0209
P2 Polyphase Code Expander-Compressor
See 0210

PULSE COMMUNICATION
Method and Apparatus for Operating on Companded PCM (Pulse Code Modulation) Voice Data
See 0102

PULSE COMPRESSION
Phase Coded Pulse Expander-Compressor
See 0203
Phase-Coded Pulse Expander-Compressor
See 0205
P1 Polyphase Code Expander-Compressor
See 0209
P2 Polyphase Code Expander-Compressor
See 0210

PULSE COUNTERS
Tally Cell Circuit
See 0295

PULSE GENERATORS
Method and Apparatus for Generating Monopulse Ultrasonic Signals
See 0270
Optically Triggered Transferred-Electron Device Microwave Burst and Single Pulse Generators
See 0273
Synchronization Tracking in Pulse Position Modulation Receiver
See 0112

PULSE MODULATION
Miniature High Performance Pulsed Modulator Apparatus
See 0272
Synchronization Tracking in Pulse Position Modulation Receiver
See 0112

PULSE RATE
Adaptive Mutual Interference Suppression Method
See 0187

PULSE TRANSFORMERS
Miniature High Performance Pulsed Modulator Apparatus
See 0272
Pulse Transformer Package for Impedance Matching a Laser Diode to a Transmission Line
See 1018

PULSED LASERS
Optically Pumped Laser System Having Extracavity Pulse Smoother
See 1015
Pulse Transformer Package for Impedance Matching a Laser Diode to a Transmission Line
See 1018

PULSED RADIATION
Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

PULVERIZED FUELS
Drying of Pulverized Material with Heated Condensible Vapor
See 0523

PUMPS
Fluidic Angular Velocity Sensor
See 0545

PUREX PROCESS
Solvent Wash Solution
See 0038

PURIFICATION
Purification of Uromodulin
See 0893
Recrystallization of Hexanitrostilbene from Dimethylsulfoxide and Methanol
See 0081

PUSH BUTTONS
Switch Debounce Circuit
See 0292

PYRIDINE THIOSEMICARBAZONE + PROPIONYL
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889

PYROLYSIS
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036
Solar-Heated Oil Shale Retort
See 0442

QUANTITATIVE CHEMICAL ANALYSIS
Quantitative Determination of Mineral Composition by Powder X-ray Diffraction
See 0028

QUARTZ RESONATORS
Acceleration Resistant Combination of Opposite-Handed Piezoelectric Crystals
See 0315
Acceleration Sensitivity Reduction Method
See 0316
Acceleration-Resistant Crystal Resonator
See 0317
Cut Angles for Quartz Crystal Resonators
See 0320
Cylindrical Crystal Resonator
See 0321
Low Noise Multiple Crystal-Controlled Oscillator
See 0267
Method of Fabricating Acceleration Resistant Crystal Resonators and Acceleration Resistant Crystal Resonators so Formed
See 0330
Method of Heating Quartz Resonators
See 0331
Stress Compensation Crystal Device
See 0337
Suppression of Vibration Effects on Piezoelectric Crystal Resonators,
See 0338

QUINOLINE THIOSEMICARBAZONE + ACETYL
2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
See 0896

QUINOLINES
4-Methyl-5-(Unsubstituted and Substituted Phenoxy)-6-Methoxy-8-(Aminoalkylamino)Quinolines
See 0897

RADAR
Survivable Ground Base Sensor
See 0214

RADAR ANTENNAS
Low Sidelobe Phased Array Antenna System
See 0198

RADAR ANTIJAMMING
Multiple Loop Sidelobe Canceller
See 0202

RADAR EQUIPMENT
Detection of Angular Modulated Electromagnetic Signals
See 0191
Optical Radar Transceiver Control Apparatus
See 0177
Tracking Servo Compensator with Rate Aiding
See 0217

RADAR HOMING
Dual Mode Radio Frequency-Infrared Frequency System
See 0968

RADAR PULSES
Method and Means for Providing Frequency Agile Operation of MTI (Moving Target Indicator) Radar
See 0201
Phase Coded Pulse Expander-Compressor
See 0203
P1 Polyphase Code Expander-Compressor
See 0209
P2 Polyphase Code Expander-Compressor
See 0210
Technique for Rapid Determination of Probability of Detection in Pulse Doppler Radars
See 0215

RADAR RECEIVERS
Bistatic Coherent Radar Receiving System
See 0189
Digital Coherent Detector
See 0248
Gain Restoration after Doppler Filtering
See 0195
RF-Primed High Power Halogen Vial Apparatus
See 0213

RADAR SIGNALS
Injection Controlled Laser Transmitter with Twin Local Oscillators
See 0173

RADAR TRACKING
Tracking Servo Compensator with Rate Aiding
See 0217

RADAR TRANSMITTERS
Range-Only Multistatic Radar System
See 0212

RADIATION ABSORPTION
High Power Laser Dump
See 1003

RADIATION DAMAGE
Lithium Counterdoped Silicon Solar Cell
See 0433

RADIATION DETECTORS
Double Photon Excitation of High-Rydberg Atoms as a Long-Lived Submillimeter Detector
See 0169
Improved Fluid Flow Meter for Measuring the Rate of Fluid Flow in a Conduit
See 0560

RADIATION EFFECTS
Radiation-Hardened Polymeric Films
See 0834

RADIATION HARDENING
Radiation Hardened Ion-Implanted GaAs Field Effect Transistor and Method for Making the Same
Specification
See 0350

RADIATION TOLERANCE
Lithium Counterdoped Silicon Solar Cell
See 0433

RADIO BEACONS
Improved Legislated Emergency Locating Transmitters and Emergency Position Indicating Radio Beacons
See 1117

RADIO COMMUNICATION
Tone Calibrated Digital Radio Communication System
See 0115

RADIO FREQUENCIES
Tone Calibrated Digital Radio Communication System
See 0115

RADIO RECEIVERS
Digital Coherent Detector
See 0248

RADIO TRANSMITTERS
Programmable Multichannel Sonobuoy Transmitter
See 0164
Tone Calibrated Digital Radio Communication System
See 0115

RADIOACTIVE WASTES
Measurement of Radionuclides in Waste Packages
See 0027
Method for Recovery of Actinides from Actinide-Bearing Scrap and Waste Nuclear Material Using O sub 2 F sub 2
See 0032

RADIOFREQUENCY
Instantaneous Frequency Measurement Receiver with Digital Processing
See 0563

RADIOFREQUENCY GENERATORS
RF-Primed High Power Halogen Vial Apparatus
See 0213

RADIOFREQUENCY LENSES
Radio Frequency Lens Antenna
See 0233

RADIOFREQUENCY OSCILLATORS
Transmission Line Biased Coherent Array of Josephson Oscillators
See 0298

RADIONUCLIDE IMAGING
Nuclear Medicine Imaging System
See 0869

RADIOPHARMACEUTICALS
Indium-111 Labeled Anti-Melanoma Monoclonal Antibodies
See 0914

RADIOTHERAPY
Palladium-109 Labeled Anti-Melanoma Monoclonal Antibodies
See 0934

RADOMES
Attachment Method-Ceramic Radome to Metal Body
See 0699
Laminated Thermoplastic Radome
See 0197

RAILGUN ACCELERATORS
Counterpulse Railgun Energy Recovery Circuit
See 0454

Overpulse Railgun Energy Recovery Circuit
See 0473

RAILROAD CARS
Device for Simulating Stress on Packages during Coupling of Railcars
See 0519

RAIN GAUGES
Rain Rate Meter
See 0614

RAMAN SPECTROSCOPY
Picosecond Broadband CARS (Coherent Antistokes Raman Spectroscopy) Probe Using the Picosecond Continuum
See 0608

RAMS(PUMPS)
Machine for Mixing and Injecting Water and Grout into a Roof Bolt Hole
See 0957

RANGE FINDERS
Ranging System Which Compares an Object Reflected Component of a Light Beam to a Reference Component of the Light Beam
See 0616

RANGE FINDING
P1 Polyphase Code Expander-Compressor
See 0209

RARE EARTHS
Method for Extracting Lanthanides and Actinides from Acid Solutions by Modification of Purex Solvent
See 0031

RASTERS
Digital Raster Timing Encoder/Decoder
See 0095

REACTION KINETICS
Technique for Measuring Gas Conversion Factors
See 0636

REACTION WHEELS
Emitted Vibration Measurement Device and Method
See 0533

REACTOR MATERIALS
Manufacturing Process to Reduce Large Grain Growth in Zirconium Alloys
See 0804

READ ONLY MEMORIES
Maintenance Port System
See 0129

READ-ONLY MEMORY DEVICES
Method and Apparatus for Operating on Companded PCM (Pulse Code Modulation) Voice Data
See 0102

REAL TIME OPERATION
Pipelined Digital SAR Azimuth Correlator Using Hybrid FFT-Transversal Filter
See 0207

RECEIVERS
Coherent Receiver Phase and Amplitude Alignment Circuit
See 0093

Hardwire Missile Receiver Coupler
See 0225

Instantaneous Frequency Measurement Receiver with Digital Processing
See 0563

Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
See 0589

Variable Length and Sensor Spacing Thermistor Array
See 0649

RECEPTORS
Dimeric Enkephalins
See 0887

RECORDING SYSTEMS
Dynamic Pressure Test Unit-Ratio Method
See 0527

Polarimetric Image Recorder
See 0983

RECRYSTALLIZATION
Recrystallization of Hexanitrostilbene from Dimethylsulfoxide and Methanol
See 0081

RECTIFIERS
Planar Doped Barrier Semiconductor Device
See 0349

REDOX CELLS
Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470

REDUCED GRAVITY
Spray Applicator for Spraying Coatings and Other Fluids in Space
See 0687

REENTRY VEHICLES
Circumferentially Wrapped Carbon-Carbon Structure
See 0773

Erosion-Resistant Nosetip Construction
See 0777

Erosion-Resistant Nosetip Construction
See 0778

REFINING
Improved Silicon Grinding Method and Apparatus
See 0706

Method for Refining Microstructures of Cast Titanium Articles
See 0809

REFLECTANCE
Diffusely Reflecting Paints Including Polytetrafluoroethylene and Method of Manufacture
See 0759

Portable Reflectance Spectrometer
See 0610

REFLECTORS
Dual Band, Low Sidelobe, High Efficiency Mirror Antenna
See 0222

REFRACTIVITY
Photorefractor Ocular Screening System
See 0871

REFRACTORY COATINGS
Thermal Barrier Coating System
See 0771

REFRIGERATORS
Combined Cold Compressor/Ejector Helium Refrigerator
See 0404

Reciprocating Magnetic Refrigerator Employing Tandem Porous Matrices within a Reciprocating Displacer
See 0423

Ten Degree Kelvin Hydride Refrigerator
See 0428

REINFORCED MATERIALS
Improved Process for the Preparation of Fiber-Reinforced Ceramic Composites by Chemical Vapor Deposition
See 0780

Silicon Carbide Whisker Reinforced Composites and Method for Making Same
See 0786

REINFORCING FIBERS
Lightweight Piston
See 0782

RELAYS
High or Low-Side Solid State Relay with Current Limiting and Operational Testing
See 0259

Transdigitizer for Relaying Signals from Global Positioning System (GPS) Satellites
See 0974

RELEASE MECHANISMS
Releasable Cable Connector Assembly for Use between a Mobile and Stationary Object
See 0154

RELEASING
Slide Release Mechanism
See 0157

RELIABILITY ENGINEERING
Phase Sensitive Guidance Sensor for Wire-Following Vehicles
See 0972

REMOTE CONTROL
Retinally Stabilized Differential Resolution Television Display
See 0181

REMOTE DETECTORS
Multiple Site Laser Excited Pollution Monitoring System
See 0597

Remote Self-Contained Undersea Monitor
See 0736

REMOTE HANDLING
Precision Manipulator Heating and Cooling Apparatus for Use in UHV (Ultrahigh Vacuum) Systems with Sample Transfer Capability
See 0681

REMOTE SENSORS
Method of and Apparatus for Measuring Temperature and Pressure
See 0587

REPAIR
System for Rapid Repair of Damaged Airfield Runways
See 0836

RESCUE EQUIPMENT
Pivotable Support for Rescue Hoist
See 1119

RESCUE SYSTEMS
Short Range Trapped Miner Locator
See 0964

RESEARCH AIRCRAFT
Miniature Electrooptical Air Flow Sensor
See 0591

RESIN MATRIX COMPOSITES
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

RESINS
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

RESISTANCE HEATING
Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

RESISTORS
Low Noise Polycrystalline Semiconductor Resistors by Hydrogen Passivation
See 0708

Measurement Amplifier
See 0268

RESOLVERS
Angular Measurement System
See 0494

RESONANCE
Arrangement for Damping the Resonance in a Laser Diode
See 0990

RESONANT FREQUENCY
High Switching Speed Electrically Tuned Microwave Magnetic Resonance Devices
See 0261

RESONATORS
Dielectric Resonator
See 0322
Dielectric Resonator Oscillators with Digital Temperature Compensation
See 0246
Microwave Resonator Using Lateral Excitation
See 0332
Unstable Optical Resonator with Cancelling Edge Waves
See 1079

RESTRAINT
Torso Restraint System
See 1120

RETINAL IMAGES
Retinally Stabilized Differential Resolution Television Display
See 0181

RETORT PROCESSING
Solar-Heated Oil Shale Retort
See 0442

RETRODIRECTIVE ANTENNAS
ECM Multiple-Target Retrodirective Antenna
See 0224

REVERSE TRANSCRIPTARE
Screening Test for Reverse-Transcriptase Containing Virus
See 0945

RF SYSTEMS
Radiofrequency Amplifier Based on a DC Superconducting Quantum Interference Device
See 0281

RIBBONS
Ribbon Growing Method and Apparatus
See 0436

RICE
Method for Preparing Improved Quality Rice-Containing Baked Products
See 0011

RING LASERS
Fiber Optic Gyroscope with Alternating Output Signal
See 0969
Transmissive Dewar Cooling Chamber for Optically Pumped Semiconductor Ring Lasers
See 1024

RING STRUCTURES
Torso Sizing Ring Construction for Hard Space Suit
See 0879

RNA POLYMERASES
Cloning and Expression of the Gene for Bacteriophage T7 RNA Polymerase
See 0901

ROBOTICS
Robotic Order Picking
See 0683

ROBOTS
Double Pinch-Push Contact Insertion End-Effector
See 0663

ROCKET COMPONENTS
Small Cartridge Heater
See 0847

ROCKET ENGINES
Heat Resistant Sheathed Insulated Electrical Conductors
See 0366

ROLLING(METALLURGY)
Hot Rolling of Ceramics by the Use of Self Propagating Synthesis
See 0704
Method for Continuously Casting
See 0712

ROTARY WINGS
Helicopter Anti-Torque System Using Strakes
See 1107

ROTATING CYLINDERS
Non-Backdriveable Free Wheeling Coupling
See 0675

ROTATING SHAFTS
Variable Force, Eddy-Current or Magnetic Damper
See 0690

ROTOR BLADES(TURBOMACHINERY)
High Pressure Turbine Rotor Two-Piece Blade Retainer
See 0145

ROTOR DISCS
High Pressure Turbine Rotor Two-Piece Blade Retainer
See 0145

ROTORS
Damping Seal for Turbomachinery
See 0742

ROUTING
Routing Method in Computer Aided Customization of a Two Level Automated Universal Array
See 0284

RUDDER PEDALS
Translating Rudder Pedal System
See 1115

RUNWAYS
System for Rapid Repair of Damaged Airfield Runways
See 0836

RUST(OXIDATION)
Passivation of Steel with Aqueous Amine Solutions
See 0813

SAFETY BELTS
Torso Restraint System
See 1120

SALTS
Preparation of Simple Nitronium Salts
See 0075

SAMPLERS
Liquid Sampling System
See 0572
Precision Digital Sampler
See 0277
Remote Sequential Gas Sampler for Blasting Areas
See 0618
Sampling Device
See 0875
Soil Sampling Apparatus
See 0628

SAMPLING
Moisture Content and Gas Sampling Device
See 0594

SAMPLING DEVICE
Sampling Device
See 0875

SAPONINS
Saponin-Based Polyether Polyols
See 0894

SATELLITE-BORNE INSTRUMENTS
Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
See 0589
Sensor System
See 0183

SAW DEVICES
Surface Acoustic Wave Device for Sensing the Presence of Chemical Agents
See 0633

SAW OSCILLATOR
SAW Oscillator with Digital Compensation for the Temperature Related Frequency Changes
See 0286

SAWS
Ingot Slicing Machine and Method
See 0669

SCANNERS
Reduction of Signal Modulation Caused by Polarization in Visible Optical Scanning Systems
See 0180

SCHISTOSOMA MANSONI
Isolated, Soluble Immunogen Against 'Schistosoma mansoni' and a Method of Vaccination Employing Same
See 0918

SCHISTOSOMIASIS
Topical Prophylaxis against Schistosomal Infections
See 0025

SCHOTTKY BARRIER DEVICES
Buried Junction Enhanced Schottky Barrier Device
See 0167
Interdigital Schottky Barrier Capacitor Apparatus
See 0326
Self-Guarding Schottky Barrier Infrared Detector Array
See 0182

SCHOTTKY DIODES
Epitaxial Thinning Process
See 0702

SCREENS(DISPLAYS)
Improved Real-Time Ultra-High Resolution Image Projection Display Using Laser-Addressed Liquid Crystal Light Valve
See 0368

SCREW THREADS
Adjustment Structure
See 0653

SCREWS
Alignment and Assembly Tool for Very Large Diameter Cylinders
See 0654

SCRUBBERS
Nebulization Reflux Concentrator
See 0033

SEA SURFACE TEMPERATURE
Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
See 0589

SEALED SYSTEMS
Sealing Assembly
See 0751

SEALS
Sodium Nitrate Containing Mixture for Producing Ceramic-Glass-Ceramic Seal by Microwave Heating
See 0752

SEALS(STOPPERS)
Damping Seal for Turbomachinery
See 0742
Lateral Support System for Canister-Launched Missile
See 0746
Oxidizing Seal for a Turbine Tip Gas Path
See 0749
Variable Friction Secondary Seal for Face Seals
See 0754

SEATS
Fire Blocking Systems for Aircraft Seat Cushions
See 1105
In-Situ Annular Face Grinder
See 0668

SECONDARY EMISSION
Textured Carbon Surfaces on Copper
See 0770

SECURE COMMUNICATIONS
Secure Digital Speech Communication
See 0108

SELF ERECTING DEVICES
Foldable Self-Erecting Joint
See 0143

SEMICONDUCTING FILMS
Method for the Preparation of Epitaxial Films of Mercury Cadmium Telluride
See 0175
Recovery of Fragile Layers Produced on Substrates by Chemical Vapor Deposition
See 1096

SEMICONDUCTOR DEVICES
Electron Beam Enhanced Surface Modification for Making Highly Resolved Structures
See 0701
Epitaxial Thinning Process
See 0702
Heterojunction Schottky Gate Mesfet with Lower Channel Ridge Barrier
See 0340
Imaging X-Ray Spectrometer
See 0556
Inelastic Tunnel Diodes
See 0341
Low Defect, High Purity Crystalline Layers Grown by Selective Deposition
See 1088
Low Noise Polycrystalline Semiconductor Resistors by Hydrogen Passivation
See 0708
Low Stress Semiconductor-Insulator Interface for Cryogenic Device Applications
See 0342
Method and Apparatus for Measuring Minority Carrier Lifetime in a Direct Band-Gap Semiconductor
See 0580
Method for the Fabrication of Dielectric Isolated Junction Field Effect Transistor and PNP Transistor
See 0714
Nondestructive Noncontact Device to Characterize Semiconductor Material
See 0600
Planar Doped Barrier Semiconductor Device
See 0349
Process and Apparatus for Growing a Crystal Ribbon
See 0034
Simultaneous Doped Layers for Semiconductor Devices
See 1022
Solid State Radiative Heat Pump
See 0426
Superlattice Ultrasonic Wave Generator
See 1069
TiW Diffusion Barrier for AuZn Ohmic Contacts to P-Type InP
See 0353
Two Carrier Dual Injector Apparatus
See 0354

SEMICONDUCTOR DOPING
Simultaneous Doped Layers for Semiconductor Devices
See 1022

SEMICONDUCTOR JUNCTIONS
Rusty Bolt Intermodulation Interference Reducer
See 0816
Screen Printed Interdigitated Back Contact Solar Cell
See 0439

SEMICONDUCTOR LASERS
Diffusion Barrier for Long Wavelength Laser Diodes
See 0997
Pulse Transformer Package for Impedance Matching a Laser Diode to a Transmission Line
See 1018
Transmissive Dewar Cooling Chamber for Optically Pumped Semiconductor Ring Lasers
See 1024
W-Shaped Diffused Stripe GaAs/AlGaAs (Gallium Arsenide/Aluminium Gallium Arsenide) Laser
See 1027

SEMICONDUCTORS
Apparatus for Etching Vertical Junction Solar Cell Wafers
See 0698
Heat Pipe and Method of making same
See 0409
Low Defect, High Purity Crystalline Layers Grown by Selective Deposition
See 1088
LPE (Liquid Phase Epitaxy) Semiconductor Material Transfer Method
See 0710
Method for Producing High Quality Germanium-Germanium Nitride Interfaces for Germanium Semiconductors and Device Produced Thereby
See 0343
Method of Reducing Impurity and Antisite Defects in Semiconductor Crystal Materials, and Device and Apparatus Respectively Produced from and Utilizing Same
See 1094
Optically Triggered Transferred-Electron Device Microwave Burst and Single Pulse Generators
See 0273
Process for Making a Heterojunction Source-Drain Insulated Gate Field-Effect Transistors Utilizing Diffusion to Form the Lattice
See 0724
Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch
See 0035
Selective Anodic Oxidation of Semiconductors for Pattern Generation
See 0351

SEMICONDUCTORS (MATERIALS)
Epitaxial Thinning Process
See 0702
Method for Growing Low Defect, High Purity Crystalline Layers
See 1089
New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434
Total Immersion Crystal Growth
See 1097

SEMICONDUCTORS(MATERIALS)
Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586

SENSORS
Humidity Sensing and Measurement Employing Halogenated Organic Polymer Membranes
See 0555
Trace Water Sensor
See 0643

SEPARATION
Recovery of Alcohol from a Fermentation Source by Separation Rather Than Distillation
See 0080

SEPARATORS
Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446
Improved Silicon Grinding Method and Apparatus
See 0706
Self-Actuating Vacuum Gas/Liquid Separator
See 0963

SEQUENCING
Method for Rapid DNA (Deoxyribonucleic Acid) Sequencing
See 0925

SERODIAGNOSIS
Enzyme-Linked Immunosorbent Assay (ELISA) for Determining Anti-Bodies against Herpes Simplex Virus (HSV) Types 1 and 2 in Human Sera
See 0905

SEROLOGY
Production of Human T-Cell Leukemia (Lymphotropic) Retrovirus (HTLV-I) Envelope Protein Fragments in Bacteria and Use in Seroepidemiological Survey of Human Lymphoid Malignancies
See 0940

SERVOMECHANISMS
Active Dispersion Control for a Doppler Broadened Laser
See 0988
Tracking Servo Compensator with Rate Aiding
See 0217

SERVOVALVES
Servo Operated Anti-G Suit Pressurization System
See 0876

SETTING(ADJUSTING)
Adjustment Structure
See 0653

SEX ATTRACTANTS
Bagworm Moth Attractant and Plant Protectant
See 0044
Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

SHACKLES
Padlock Shackle
See 0152

SHAFTS(MACHINE ELEMENTS)
Angular Measurement System
See 0494
Electronic Module Insertion and Retraction Mechanism
See 0664
Multi-Track Optical Shaft Position and Timing Cylinder
See 0979
Non-Backdriveable Free Wheeling Coupling
See 0675
Sampling Device
See 0875

SHALE OIL
Solar-Heated Oil Shale Retort
See 0442

SHALES
Solar-Heated Oil Shale Retort
See 0442

SHEETS
Method for Continuously Casting
See 0712

SHIELDING
Removable Cleanable Antireflection Shield
See 1114
Slow Wave Circuit with Shaped Dielectric Substrate
See 0291

SHIFT REGISTERS
CCD (Charge-Coupled Device) Gaussian Convolution Method
See 0359

SHIP AUXILIARY EQUIPMENT
Improvements in Linked-Spar Motion-Compensated Lifting System
See 0733

SHOCK ABSORBERS
Multiple Rate Shock Isolator Damping Valve
See 0486

SHOULDERS
Shoulder and Hip Joint for Hard Space Suits and the Like
See 0877

SIDELOBE CANCELLERS
Multiple Loop Sidelobe Canceller
See 0202

SIDELOBES
Low Sidelobe Phased Array Antenna System
See 0196
Low Sidelobe, High Efficiency Mirror Antenna with Twist Reflector
See 0229
Multiple Loop Sidelobe Canceller
See 0202
Reducing Grating Lobes Due to Subarray Amplitude Tapering
See 0234

SIGNAL GENERATORS
Rotor Blade Test Apparatus
See 0622

SIGNAL PROCESSING
Adaptive Fast Fourier Transform Weighting Technique to Increase Small Target Sensitivity
See 0185
Detection of Angular Modulated Electromagnetic Signals
See 0191
Digital Coherent Detector
See 0248
Electro-Optical Target Detection
See 0171
Fly's Eye Sensor Nonlinear Signal Processing
See 0546
Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
See 1054
Parallel Local Interface Bus
See 0133
Pipelined Digital SAR Azimuth Correlator Using Hybrid FFT-Transversal Filter
See 0207
Pulse Compression System
See 0106
Scanning Alarm Electronic Processor
See 0623
Switch Debounce Circuit
See 0292
Three-Stage Binary Coincidence Detector Apparatus with Adaptive Constant False Alarm Rate
See 0114

SILANES
Polysilane Positive Photoresist Materials and Methods for Their Use
See 0830

SILICA
Method for Removing Oxide Contamination from Silicon Carbide Powders
See 0844

SILICON
Apparatus and Method for the Horizontal, Crucible-Free Growth of Silicon Sheet Crystals
See 1082
Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
See 1085
Improved Silicon Grinding Method and Apparatus
See 0706
Increased Voltage Photovoltaic Cell
See 0432
Method and Apparatus for Casting Conductive and Semi-Conductive Materials
See 0711
Process and Apparatus for Growing a Crystal Ribbon
See 0034
Process for Improving the Quality of Epitaxial Silicon Films Grown on Insulating Substrates
See 0723
Ribbon Growing Method and Apparatus
See 0436

SILICON CARBIDES
Dispersion Toughened Ceramic Composites and Method for Making Same
See 0776
Liquid Phase Epitaxy (LPE) of Silicon Carbide
See 1086
Method for Removing Oxide Contamination from Silicon Carbide Powders
See 0844
Method of Preparing Single Crystalline Cubic Silicon Carbide Layers
See 1093

SILICON DIOXIDE
Process for Improving the Quality of Epitaxial Silicon Films Grown on Insulating Substrates
See 0723

SILICON FILMS
Ingot Slicing Machine and Method
See 0669

SILICON NITRIDES
Method for Producing High Quality Germanium-Germanium Nitride Interfaces for Germanium Semiconductors and Device Produced Thereby
See 0343

SILICON RADIATION DETECTORS
Imaging X-Ray Spectrometer
See 0556

SILICONES
Structural Pressure Sensitive Silicone Adhesives
See 0753

SILOXANES
Method for Controlling the Viscosity of Siloxane Oils
See 0842

SILVER
Method of Bonding Silver to Glass and Mirrors Produced According to This Method
See 0717

SILVER STAINS
Silver Stains for Protein in Gels-A Modified Procedure
See 0947

SIMULATION
Matrix Display Simulation
See 0371

SIMULTANEOUS EQUATIONS
Method and Apparatus for Self-Calibration and Phasing of Array Antenna
See 0230

SINGLE CRYSTALS
Acceleration-Resistant Crystal Resonator
See 0317
Cut Angles for Quartz Crystal Resonators
See 0320
Diamondlike Flakes
See 0758
Low Noise Multiple Crystal-Controlled Oscillator
See 0267
Low Stress Semiconductor-Insulator Interface for Cryogenic Device Applications
See 0342
Method for the Deposition of High-Quality Crystal Epitaxial Films of Iron
See 1092
Total Immersion Crystal Growth
See 1097

SINGLE SIDEBAND COMMUNICATIONS
Detection of Angular Modulated Electromagnetic Signals
See 0191

SIZE SEPARATION
Acoustic Particle Separation
See 0030
Improved Silicon Grinding Method and Apparatus
See 0706

SIZE(DIMENSIONS)
Torso Sizing Ring Construction for Hard Space Suit
See 0879

SKIN FRICTION
Two-Axis, Self-Nulling Skin Friction Balance
See 0647

SKIN(GENERAL)
Process and Compositions for Preserving Fresh Hides and Skins
See 0846

SLIDING
Sealing Assembly
See 0751

SLOT LINES
Slot Line Tunable Bandpass Filter
See 0290

SLOW WAVE CIRCUITS
Slow Wave Circuit with Shaped Dielectric Substrate
See 0291

SMOKE
Continuous Laminar Smoke Generator
See 0514

SNORKELS
Sump Arrangement for Snorkel Intake
See 0738

SNOW
Snow Scale/Rate Meter
See 0626

SNOW ACCUMULATION
Snow Scale/Rate Meter
See 0626

SNOWFLAKES
Fall Velocity Indicator/Viewer
See 0535

SODIUM
Method for Reducing Sodium Content and Simultaneously Increasing Potassium Content of a Food
See 0012

SODIUM CARBONATES
Improved Catalysts for Carbon and Coal Gasification
See 0389

SODIUM CHLORIDES
Improved Catalysts for Carbon and Coal Gasification
See 0389

SODIUM SULFATES
Improved Catalysts for Carbon and Coal Gasification
See 0389

SOIL TESTS
Soil Extraction Kit
See 0627

SOIL WATER
Method and Apparatus to Control Soil Moisture Matric Potential
See 0008

SOILS
Soil Sampling Apparatus
See 0628

SOLANUM PTYCANTHUM
Control of Eastern Black Nightshade with a Fungal Pathogen
See 0003

SOLAR ARRAYS
Solar Powered Actuator with Continuously Variable Auxiliary Power Control
See 0441

SOLAR CELLS
Apparatus for Etching Vertical Junction Solar Cell Wafers
See 0698
Lithium Counterdoped Silicon Solar Cell
See 0433
Mask Aligner for Solar Cell Fabrication
See 0672
New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434
Production of Silver Metallization by the Decomposition of Silver Compounds
See 0768
Screen Printed Interdigitated Back Contact Solar Cell
See 0439
Solar Cell Coverslide Extraction Method and Apparatus
See 0686

SOLAR COLLECTORS
Stable Density Stratification Solar Pond
See 0443

SOLAR ENERGY
Saltless Solar Pond
See 0438
Stable Density Stratification Solar Pond
See 0443

SOLAR ENERGY CONVERSION
Bi-Directional Control System for Energy Flow in a Solar Powered Flywheel
See 0450
Solar Energy Converter Using Surface Plasma Waves
See 0440

SOLAR HEATING
Solar-Heated Oil Shale Retort
See 0442

SOLAR HEATING SYSTEMS
Solar System Fault Detection
See 0425

SOLAR PONDS (HEAT STORAGE)
Saltless Solar Pond
See 0438
Stable Density Stratification Solar Pond
See 0443

SOLDERED JOINTS
Technique of Assembling Structures Using Vapor Phase Soldering
See 0726

SOLDERING
Hermetic Chip Carrier Compliant Soldering Pads
See 0258
Method for Ultrasonic Bonding to Soft Microelectronic Substrates
See 0715
Technique of Assembling Structures Using Vapor Phase Soldering
See 0726

SOLID ELECTROLYTES
Polyethylene Imine-Metal Salt Solid Electrolyte
See 0474

SOLID PROPELLANTS
Azido Nitramino Ether Containing Solid Propellants
See 0042
Azido Nitramino Ethers
See 0043
Captive Volume Device as a Safe Life Monitor
See 0508

SOLID ROCKET PROPELLANT PLASTICIZERS
Plasticizer System for Propellant Compositions
See 0069
Plasticizer System for Propellant Compositions
See 0070
Propellant Plasticizer
See 0077

SOLID ROCKET PROPELLANTS
Azido Nitramino Ethers
See 0043

SOLID SOLUTIONS
Solid Sorbent Air Sampler
See 0629

SOLID STATE DEVICES
Solar Energy Converter Using Surface Plasma Waves
See 0440

SOLID STATE ELECTRONICS
Filter Reflection Image Guide Oscillator and Solid State Line Scanning Device
See 0254

SOLID WASTES
Liquid Sampling System
See 0572

SOLIDIFICATION
Hot Melt Adhesive Attachment Pad
See 0745

SOLUBILITY
Saponin-Based Polyether Polyols
See 0894

SOLVENTS
Nebulization Reflux Concentrator
See 0033

SONAR ARRAYS
Directional Line-Hydrophone Array Calibrator
See 0163
Sampled Towed Array Telemetry
See 0165

SONAR SIGNALS
Sampled Towed Array Telemetry
See 0165

SONAR TRANSDUCERS
Broadband Matching Network
See 0161
Deep Ocean Wide Band Acoustic Baffle
See 0162

SONOBUOYS
Sonobuoy Float Inflation and Depth Selection Initiators
See 0737

SORBENTS
Solid Sorbent Air Sampler
See 0629

SOUND WAVES
Acoustic Particle Separation
See 0030
Dual Differential Interferometer
See 0525

SOYBEANS
Production of Defatted Soybean Products by Supercritical Fluid Extraction
See 0018

SPACE CHARGE
FET Charge Sensor and Voltage Probe
See 0539

SPACE ERECTABLE STRUCTURES
Foldable Self-Erecting Joint
See 0143

SPACE MANUFACTURING
Low Gravity Exothermic Heating/Cooling Apparatus
See 0415

SPACE SHUTTLES
Hemispherical Latching Apparatus
See 0144
Slide Release Mechanism
See 0157

SPACE STORAGE
Hemispherical Latching Apparatus
See 0144

SPACE SUITS
Shoulder and Hip Joint for Hard Space Suits and the Like
See 0877
Torso Sizing Ring Construction for Hard Space Suit
See 0879

SPACECRAFT CABIN ATMOSPHERES
Solid Sorbent Air Sampler
See 0629

SPACECRAFT COMMUNICATION
Reed-Solomon Decoder
See 0107

SPACECRAFT CONSTRUCTION MATERIALS
Oxidation Protection Coatings for Polymers
See 0764

SPACECRAFT INSTRUMENTS
Optical System
See 1065

SPACECRAFT POWER SUPPLIES
Bi-Directional Control System for Energy Flow in a Solar Powered Flywheel
See 0450

SPACECRAFT RADIATORS
Multi-Leg Heat Pipe Evaporator
See 0418

SPACECRAFT SHIELDING
Mechanical Fastener
See 0150

SPACECRAFT STRUCTURES
Curved Cap Corrugated Sheet
See 1102
Elastomer Toughened Polyimide Adhesives
See 0743

SPACELAB PAYLOADS
Hemispherical Latching Apparatus
See 0144

SPARGING
Formation of Tungsten Monocarbide from a Molten Tungstate-Halide Phase by Gas Sparging
See 0840

SPATIAL FILTERING
Jinc-Trap Resonator
See 1007

SPECKLE ELIMINATORS
Laser Target Speckle Eliminator
See 1050

SPECTRAL CORRELATION
Correlation Spectrometer Having High Resolution and Multiplexing Capability
See 0515

SPECTROCHEMICAL ANALYSIS
Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
See 0495

SPECTROMETERS
Correlation Spectrometer Having High Resolution and Multiplexing Capability
See 0515
Portable Reflectance Spectrometer
See 0610
Time Resolved Extended X-Ray Absorption Fine Structure Spectrometer
See 0641
Twin-Etalon Scanning Spectrometer
See 1078

SPECTRUM ANALYZERS
Bragg Cell Spectrum Analyzer Specification
See 1031

SPEED INDICATORS
Miniature Electrooptical Air Flow Sensor
See 0591

SPHERICAL ABERRATION
Method of Measuring Spherical Aberration and Apparatus Therefor
See 1057

SPLICING
Low Loss Splicing Method for Single-Mode Optical Fiber
See 1053

SPRAYED COATINGS
Improved Thermal Barrier Coating System
See 0761
Spray Applicator for Spraying Coatings and Other Fluids in Space
See 0687

SPRAYERS
Recirculating Wiper for Agricultural Chemicals
See 0021
Spray Applicator for Spraying Coatings and Other Fluids in Space
See 0687

SPUTTERING
Diamondlike Flakes
See 0758
Liquid Crystal Light Valve Structures
See 1052
Oxidation Protection Coatings for Polymers
See 0764
Textured Carbon Surfaces on Copper
See 0770

SQUID DEVICES
Rotating Squid Magnetometers and Gradiometers
See 0621

STABILITY AUGMENTATION
Leading Edge Flap System for Aircraft Control Augmentation
See 1109

STABILIZED PLATFORMS
Current Stabilized Underwater Platform
See 0728

STARCHES
Modified Starches as Extenders for Absorbent Polymers
See 0016

STATORS
Damping Seal for Turbomachinery
See 0742

STEAM
Method and System for Producing Lower Alcohols
See 0392

STEAM GENERATORS
Control System for Fluid Heated Steam Generator
See 0405

STEAM INJECTION
Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
See 0960

STEEL
Passivation of Steel with Aqueous Amine Solutions
See 0813

STEELS
Ion-Beam Nitriding of Steels
See 0707

STEREOPHOTOGRAPHY
Stereoscopic Video Imagery Generation
See 0987

STILBENE + HEXANITRO
Recrystallization of Hexanitrostilbene from Dimethylsulfoxide and Methanol
See 0081

STOKES RADIATION
Picosecond Broadband CARS (Coherent Antistokes Raman Spectroscopy) Probe Using the Picosecond Continuum
See 0608

STORAGE
Solid State Hydrogen Pumping and Storage Material
See 0400

STORAGE BATTERIES
Rechargeable Lithium Cell
See 0476
Rechargeable Lithium-Organic Electrolyte Battery Having Overcharge Protection and Method of Providing Overcharge Protection for a Lithium-Organic Electrolyte Battery
See 0477

STOWAGE(ONBOARD EQUIPMENT)
Hemispherical Latching Apparatus
See 0144

STRADDLE LIFTS
Marginal Terrain Straddle-Lift Container Handler
See 1118

STRADDLE TRUCKS
Multi-Directional Straddle-Lift Carrier
See 0673

STRAIN GAGES
Thin Film Strain Transducer
See 0639

STRAIN MEASUREMENT
Thin Film Strain Transducer
See 0639

STRAKES
Helicopter Anti-Torque System Using Strakes
See 1107

STREAK CAMERAS
Microchannel Plate Streak Camera
See 0590

STRIP TRANSMISSION LINES
Coaxial Cavity Gunn Oscillator Using Probe Coupled Microstrip
See 0240

STRUCTURAL DESIGN CRITERIA
Over the Wing Propeller
See 1110

STRUCTURAL MEMBERS
Daze Fasteners
See 0140

STYRENES
Stabilized Unsaturated Polyesters
See 0082

SUBASSEMBLIES
Multistage Spent Particle Collector and a Method for Making Same
See 0674

SUBMARINE HULLS
In-Situ Annular Face Grinder
See 0668

SUBMILLIMETER WAVES
Double Photon Excitation of High-Rydberg Atoms as a Long-Lived Submillimeter Detector
See 0169

SUBSTITUTION REACTIONS
Method for Introducing Fluorine into an Aromatic Ring
See 0059

SUBSTRATES
Device for Cryogenically Fabricating Source Material for Plasma X-ray Lasers
See 0995
Increased Voltage Photovoltaic Cell
See 0432
Method for Ultrasonic Bonding to Soft Microelectronic Substrates
See 0715
Overlay Metallic-Cermet Alloy Coating Systems
See 0763
Process to Produce Fine Line Metallic Collection Patterns on Semiconductors Devices
See 0815
Slow Wave Circuit with Shaped Dielectric Substrate
See 0291

SUCTION PUMPS
Forward Field Autotransfusion Device
See 0857

SULFATE PULPING
Membrane Processes for Separation of Organic Acids from Kraft Black Liquors
See 0841

SULFIDE MINERALS
Production of Lead from Sulfides
See 0961

SULFONES
Process for Preparing Solvent Resistant, Thermoplastic Aromatic Poly(Imidesulfone)
See 0832

SULFUR DIOXIDE
Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
See 0398

SULFURIC ACID
Synthesis of 2,4,8,10-Tetroxaspiro5,5undecane
See 0086

SUMPS
Sump Arrangement for Snorkel Intake
See 0738

SUPERCONDUCTING CABLES
Apparatus Producing Constant Cable Tension for Intermittent Demand
See 0656
Method to Improve Superconductor Cable
See 0373
Multistrand Superconductor Cable
See 0376

SUPERCONDUCTING COILS
Superconducting Magnetic Energy Storage for Asynchronous Electrical Systems
See 0480

SUPERCONDUCTING MAGNETS
Aluminum-Stabilized Nb sub 3 Sn Superconductor
See 0798
Reciprocating Magnetic Refrigerator Employing Tandem Porous Matrices within a Reciprocating Displacer
See 0423

SUPERCRITICAL FLUID EXTRACTION
Production of Defatted Soybean Products by Supercritical Fluid Extraction
See 0018

SUPERCRITICAL FLUIDS
Method for Growth of Crystals by Pressure Reduction of Supercritical or Subcritical Solution
See 1090

SUPERSONIC AIRCRAFT
Laminated Thermoplastic Radome
See 0197

SUPPORTS
Extensible Brattice Support System for Mine Face Ventilation
See 0954
Model Mount System for Testing Flutter
See 0592
Portable Pallet Weighing Apparatus
See 0609
Remote Pivot Decoupler Pylon: Wing/Store Suppression
See 1113
Thermally Isolated Structural Support Link
See 0429
Three-Point Spherical Mirror Mount
See 1023

SUPPRESSION
Suppression of Vibration Effects on Piezoelectric Crystal Resonators,
See 0338

SUPPRESSORS
Gyrotron Traveling-Wave Device Including Quarter Wavelength Anti-Reflective Dielectric Layer to Enhance Microwave Absorption
See 0365
Interference Suppressor for Radar MTI
See 0196

SURFACE ACOUSTIC WAVE DEVICES
Microwave Bandstop Filter
See 0271
Microwave SAW (Surface Acoustic Wave) Monochromator
See 0333
SAW Oscillator with Digital Compensation for the Temperature Related Frequency Changes
See 0286
Surface Acoustic Wave Device for Sensing the Presence of Chemical Agents
See 0633

SURFACE ACOUSTIC WAVES
Dual Differential Interferometer
See 0525
Wideband SAW (Surface Acoustic Wave) Channellizer Using Slanted Array Input Transducer
See 0302

SURFACE CHEMISTRY
Fluorination by Inorganic Fluorides in Glow Discharge
See 0760

SURFACE FINISHING
Diamondlike Flakes
See 0758
Ion-Beam Nitriding of Steels
See 0707
Method for Melt-Coating a Surface
See 0713
Process to Produce Fine Line Metallic Collection Patterns on Semiconductors Devices
See 0815
Textured Carbon Surfaces on Copper
See 0770

SURFACE TREATMENTS
Electron Beam Enhanced Surface Modification for Making Highly Resolved Structures
See 0701

SURFACE WAVES
Dual Differential Interferometer
See 0525
Solar Energy Converter Using Surface Plasma Waves
See 0440

SURGERY
Excimer Laser Phototherapy for the Dissolution of Vascular Obstruction
See 0906
Suture Needle Holder
See 0878

SURVIVABLE COMMUNICATIONS
Communications Network Status Information System
See 0094

SUSPENSION DEVICES
Gyro Sensor Block Suspension
See 0970
Low-Profile Fastener
See 0149
Sonobuoy Float Inflation and Depth Selection Initiators
See 0737
Transient Test of Suspension Electronics for Gyroscope
See 0975

SUTURES
Suture Needle Holder
See 0878

SWITCHES
Electro-Optic Harmonic Conversion to Switch a Laser Beam Out of a Cavity
See 1038
Electronic Logic for Enhanced Switch Reliability
See 0251
High or Low-Side Solid State Relay with Current Limiting and Operational Testing
See 0259
Three-Phase Power Factor Controller with Induced EMF Sensing
See 0313
Transparent Electrode for Optical Switch
See 1076

SWITCHING CIRCUITS
Fast Switching Driver for Inductive Load, Such as a Phase Shifter
See 0194
Simplified DC to DC Converter
See 0289
Switch Debounce Circuit
See 0292

SWITCHING LOGIC
Elevator/Hatch Controller Platform Leveling Logic with Safety Features
See 0730

SYNCHRONIZATION(ELECTRONICS)
Transmission Line Biased Coherent Array of Josephson Oscillators
See 0298

SYNTHESIS(CHEMISTRY)
(Vinyloxy)Chlorocyclotriphosphazenes
See 0040
Antiinflammatory 2,3-Didemethylcolchicine and Derivatives
See 0885
Bagworm Moth Attractant and Plant Protectant
See 0044
Biologically-Active Xanthine Derivatives
See 0045
Carbamates of Colchicine for Treatment of Gout
See 0046
Chelating Agents for the Treatment of Iron Overload
See 0886
Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
See 0051
Dimeric Enkephalins
See 0887
Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052
Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824
Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055
Fire-Resistant Phosphorus Containing Polyimides and Copolyimides
See 0825
Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056
Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058
Method for Making Heterocyclic Block Copolymers
See 0060
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889
Method of Preparing Tetrahydrofuran
See 0061
New Antineoplastic Platinum (IV) Complexes
See 0063
Pentafluorotelluriumoxide Fluorocarbons
See 0064
Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxbenzenes in Insect Population Control
See 0072
Preparation of Ethylenediamine Dinitrate
See 0073
Preparation of Polymers of Functionalized Acetylenes
See 0074
Preparation of Simple Nitronium Salts
See 0075
Pseudo-P-1,2,2,9,9,10,10-Octo-Fluoro(2,2)-P-Cyclophane Bis-Acid Chloride
See 0078
Purification of Uromodulin
See 0893
Rapid Production of Ispropenyl Esters
See 0079
Recovery of Alcohol from a Fermentation Source by Separation Rather Than Distillation
See 0080
Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083
Synthesis of Arylene Siloxanylene Polymers and Copolymers
See 0084
Synthesis of Geminal Dinitro Compounds
See 0085
Synthesis of 2,4,8,10-Tetroxaspiro5,5undecane
See 0086
Synthetic Peptides for the Production of Specific Keratin Proteins
See 0087
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088
Thermosetting Arylether Compounds and Their Synthesis
See 0090

SYNTHETIC APERTURE RADAR
Method and Apparatus for Delta Kappa Synthetic Aperture Radar Measurement of Ocean Current
See 0199
Pipelined Digital SAR Azimuth Correlator Using Hybrid FFT-Transversal Filter
See 0207

SYRINGIC ACID+(ETHYLHEXYL-ESTER)
Biocompatible Cementitious Dental Compositions
See 0740

SYSTEMS ENGINEERING
System for Controlling the Oxygen Content of a Gas Produced by Combustion
See 0634

TABS (CONTROL SURFACES)
Aircraft Rotor Blade with Passive Tuned Tab
See 1099

TACKINESS
Structural Pressure Sensitive Silicone Adhesives
See 0753

TARGET SIGNATURES
Electronically Controlled Array for Simulation of Passive Target/Background Signatures at Millimeter Wavelengths
See 0193

TARGETS
Test Target for Adaptive Optics
See 1074

TEA LASERS
Improved Operation of Transversely Exited N2O Lasers
See 1006

TECHNETIUM
Separation of Uranium from Technetium in Recovery of Spent Nuclear Fuel
See 0037

TECHNETIUM 99

TECHNETIUM 99
New Method for the Selective Labeling of Erythrocytes in Whole Blood with Tc-99M
See 0930

TEFLON (TRADEMARK)
Method for Ultrasonic Bonding to Soft Microelectronic Substrates
See 0715

TELEMETER SYSTEMS
Sampled Towed Array Telemetry
See 0165

TELEMETERING TRANSMITTERS
Variable Length and Sensor Spacing Thermistor Array,
See 0649

TELEPHONE SYSTEMS
Low Voltage Two Wire to Four Wire Telephone Circuit Converter Apparatus
See 0101
Single Optical Fiber Telephone System
See 0110

TELESCOPE LENSES
Helmet Mounted Telescope
See 1043

TELESCOPES
Direct View Helmet Mounted Telescope
See 0168
Wide-Angle Flat Field Telescope
See 1080

TELEVISION CAMERAS
Television Camera Video Level Control System
See 0113

TELEVISION RECEPTION
Retinally Stabilized Differential Resolution Television Display
See 0181

TELLURIUM OXIDE+PENTAFLUORO
Pentafluorotelluriumoxide Fluorocarbons
See 0064

TEMPERATURE CONTROL
Electronic Temperature Equalizer
See 0532
High Temperature Acoustic Levitator
See 0703

TEMPERATURE MEASUREMENT
Echometry Device and Method
See 0528
Method for Thermal Monitoring Subcutaneous Tissue
See 0868
Method of and Apparatus for Measuring Temperature and Pressure
See 0587
Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
See 0589
Temperature Sensitive Oscillator
See 0296

TEMPERATURE MEASURING INSTRUMENTS
Fast Granular Superconducting Bolometer
See 0536

TENSILE TESTS
Tensile Testing Apparatus
See 0637

TEOTF(TRANSVERSE ELECTRODE ELECTROOPTIC TUNABLE FILTERS)
Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
See 1047

TERMINAL HOMING
Dual Mode Radio Frequency-Infrared Frequency System
See 0968

TEST EQUIPMENT
Captive Volume Device as a Safe Life Monitor
See 0508
Detonation Transfer Evaluation Technique
See 0517
Device for Simulating Stress on Packages during Coupling of Railcars
See 0519
Eddy Current Test Probe with Circumferential Segments and Method of Testing Material Surrounding Fastener Holes
See 0529
Heater Block Assembly for Use in Thermal Oxidation Testing of Jet Fuel
See 0551
Nickel-Cadmium Battery Conditioner and Tester Apparatus
See 0471
Osteoclast for Whole Bone Testing
See 0870
Remote Optical Crack Sensing System
See 0617
Rotor Blade Test Apparatus
See 0622
Test Device for Expendable Bathythermograph Set (XBT)
See 0638
Test Target for Adaptive Optics
See 1074
Transceiver Test Device
See 0644
Vision Test Chart and Method Using Gaussians
See 0883

TEST FACILITIES
Opacity Control Technique for Jet Engine Test Cells
See 0602

TEST METHODS
Osteoclast for Whole Bone Testing
See 0870

TEST VEHICLES
Longwall Shearer Tracking System
See 0956
Releasable Cable Connector Assembly for Use between a Mobile and Stationary Object
See 0154

TETHERLINES
Non-Backdriveable Free Wheeling Coupling
See 0675

TETRAZOLE+NITRO-(ETHYLENE DIAMINE-SALT)
Ethylenediamine Salt of 5-Nitrotetrazole and Preparation
See 0054

TETROXASPIROUNDECANE
Synthesis of 2,4,8,10-Tetroxaspiro5,5undecane
See 0086

TEXTILE FINISHES
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0793

TEXTILE FINISHING
Mild-Cure Formaldehyde-Free Durable-Press Finishing of Cotton Textiles with Glyoxal and Glycols
See 0791
Process to Impart Smooth-Dry and Flame Retardant Properties to Synthetic-Cellulosic Blended Fabrics
See 0792

TEXTILE PROCESSES
Abrasion-Resistant Durable-Press Acrylic Finishes for Cotton Textiles by Use of Nonoxidative Polymerization Initiators and Accelerators in Two-Stage Heat Curing
See 0790
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0794
Temperature Adaptable Textile Fibers and Method of Preparing Same
See 0795

THERMAL EMISSION
Continuous Laminar Smoke Generator
See 0514

THERMAL EXPANSION
Daze Fasteners
See 0140

THERMAL INSULATION
Heat Resistant Sheathed Insulated Electrical Conductors
See 0366
High Temperature Structural Insulating Material
See 0411
Insulation Bonding Test System
See 0565
Thermally Isolated Structural Support Link
See 0429

THERMAL ISOLATORS
Thermally Isolated Structural Support Link
See 0429

THERMAL PROTECTION
Improved Thermal Barrier Coating System
See 0761
Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
See 0765
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766

THERMAL RADIATION
Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

THERMAL RESISTANCE
Fire and Heat Resistant Laminating Resins Based on Maleimido and Citraconimido Substituted 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diaminobenzenes
See 0823
Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824
Thermal Barrier Coating System
See 0771

THERMAL STABILITY
Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055
Thermally Stable Thermoset Resin Compositions
See 0837

THERMAL STRESSES
Daze Fasteners
See 0140

THERMIONIC POWER GENERATION
High Thermal Power Density Heat Transfer Apparatus Providing Electrical Isolation at High Temperature Using Heat Pipes
See 0412
Thermionic Photovoltaic Energy Converter
See 0445

THERMISTORS
Variable Length and Sensor Spacing Thermistor Array,
See 0649

THERMOCHEMISTRY
Thermochemical Energy Transport Using a Hydrogen Rich Working Fluid
See 0483

THERMOCOUPLES
Spring Loaded Thermocouple Module
See 0630

THERMODYNAMIC PROPERTIES
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0047

THERMOELECTRIC GENERATORS
Thermoelectric Generator and Method for the Fabrication Thereof
See 0484

THERMOPLASTIC FILMS
Induction Heating Gun
See 0414

THERMOPLASTIC RESINS
Hot Melt Adhesive Attachment Pad
See 0745
Phenoxy Resins Containing Pendent Ethynyl Groups and Cured Resins Obtained Therefrom
See 0066

THERMOPLASTICITY
Process for Preparing Solvent Resistant, Thermoplastic Aromatic Poly(Imidesulfone)
See 0832
Thermoset-Thermoplastic Aromatic Polyamide Containing n-Propargyl Groups
See 0838

THERMOSETTING PLASTICS
Thermally Stable Thermoset Resin Compositions
See 0837
Thermosetting Arylether Compounds and Their Synthesis
See 0090

THIAZOLES
Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
See 0051

THICKNESS
Liquid Thickness Gage
See 0573

THIN FILMS
Deposition of Diamondlike Carbon Films
See 0757
Epitaxial Thinning Process
See 0702
Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
See 0408
Process to Produce Fine Line Metallic Collection Patterns on Semiconductors Devices
See 0815

THRUSTERS
Small Cartridge Heater
See 0847

THYRISTORS
Three-Phase Power Factor Controller with Induced EMF Sensing
See 0313

TILES
Mechanical Fastener
See 0150

TIME MEASUREMENT
Synchronization Tracking in Pulse Position Modulation Receiver
See 0112
Volumetric Fuel Quantity Gauge
See 0652

TIME SIGNALS
Clock Distribution Circuit for Active Aperture Antenna Array
See 0219

TIN
New Method for the Selective Labeling of Erythrocytes in Whole Blood with Tc-99M
See 0930

TIN ALLOYS
Aluminum-Stabilized Nb sub 3 Sn Superconductor
See 0798

TIN COMPOUNDS
Variable Temperature Trap
See 0650

TIRE DEFLATION
Tire Deflation Mechanism
See 0489

TIRE TUBES
Tire Inflation/Deflation System
See 0490

TIRES
Tire Deflation Mechanism
See 0489
Tire Inflation/Deflation System
See 0490

TISSUES (BIOLOGY)
Method for Thermal Monitoring Subcutaneous Tissue
See 0868

TITANIUM ALLOYS
Method for Refining Microstructures of Cast Titanium Articles
See 0809
Titanium Metal-Matrix Composites
See 0788
Wear Improvement in Titanium Alloys by Ion Implantation
See 0817

TITANIUM SILICIDES
Dispersion Toughened Ceramic Composites and Method for Making Same
See 0776

TOLUENE
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

TOMOGRAPHY
Three-Dimensional and Tomographic Imaging Device for X-ray and gamma-Ray Emitting Objects
See 0640

TOOLS
Connection System
See 0139
Printed Wiring Board Circuit Isolator Tool
See 0682

TOPOLOGY
Radio Frequency Lens Antenna
See 0233

TORCHES
Nozzle for Self-Contained Cutting Torches
See 0676

TOROIDS
Method and Apparatus for the Pressing and Alignment of Radially Oriented Toroidal Magnets
See 0328

TORQUE
Helicopter Anti-Torque System Using Strakes
See 1107
Torque Sensor
See 0642

TORSO
Torso Sizing Ring Construction for Hard Space Suit
See 0879

TOWED ARRAYS
Sampled Towed Array Telemetry
See 0165

TOWED SONAR
Broadband Matching Network
See 0161
Sampled Towed Array Telemetry
See 0165

TOXIC AGENT ALARMS
Scanning Alarm Electronic Processor
See 0623

TOXIC AGENTS
Biological Sensor for the Detection of Toxicants
See 0505
Method and Apparatus for the Detection of Toxicants
See 0584
Multiple Site Laser Excited Pollution Monitoring System
See 0597

TOXIC SUBSTANCES
Improved Polyethylene Glycol (PEG) Reagent
See 0913
Method for Detecting Aflatoxin in Almonds
See 0009

TOXICITY
Chelating Agents for the Treatment of Iron Overload
See 0886
Water Toxicity Field Test System
See 0953

TOXICOLOGY
Process for Site-Specific Mutagenesis without Phenotypic Selection
See 0939
Pseudomonas Exotoxin Conjugate Immunotoxins
See 0941

TRACE CONTAMINANTS
Nebulization Reflux Concentrator
See 0033

TRACKING
Sample Data Phase Locked Loop for Adaptive Doppler Tracker
See 0285
Simultaneous Detection of Time Coincident Signals in an Adaptive Doppler Tracker
See 0109

TRANSDUCERS
Apparatus and Method for Determining the Phase Sensitivity of Hydrophones
See 1081
Electrolytic Pressure Transduction System
See 0855
Fly's Eye Sensor Nonlinear Signal Processing
See 0546
Magnetostatic Wave Frequency Analyzer Apparatus
See 0575
Non-Bonded Ultrasonic Transducer
See 0599
Shear Wave Transducer for Boreholes
See 0624
Thin Film Strain Transducer
See 0639
Wideband SAW (Surface Acoustic Wave) Channellizer Using Slanted Array Input Transducer
See 0302

TRANSFORMERS
High Voltage Isolation Transformer
See 0324
Printed Circuit Balun with a Dipole Antenna
See 0232

TRANSIENT HEATING
Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

TRANSISTOR AMPLIFIERS
Data Acquisition Channel Apparatus
See 0245
Dual-Gate MESFET Variable Gain Constant Output Power Amplifier
See 0250

TRANSISTORS
Method of Characterizing Critical Timing Paths and Analyzing Timing Related Failure Modes in Very Large Scale Integrated Circuits
See 0588

TRANSMISSION CIRCUITS
Beam Forming Network
See 0218

TRANSMISSION LINES
Amplitude and Phase Modulation in Fin-Lines Electrical Tuning
See 0355
Process to Produce Fine Line Metallic Collection Patterns on Semiconductors Devices
See 0815

TRANSMISSOMETERS
Atmospheric Transmissometer
See 0502

TRANSMITTER RECEIVERS
Transceiver Test Device
See 0644

TRANSMITTERS
Optical Radar Transceiver Control Apparatus
See 0177

TRANSPARENCE
Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
See 0765
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766

TRANSPORT MECHANISMS(MACHINERY)
Optical Disc Transport System
See 0980

TRANSPORTATION
Shuttle Car Loading System
See 0965

TRANSURANIUM ELEMENTS
Apparatus and Method for Identification of Matrix Materials in Which Transuranic Elements Are Embedded Using Thermal Neutron Capture gamma-Ray Emission
See 0026
Measurement of Radionuclides in Waste Packages
See 0027

TRAPS
Boll Weevil Trap
See 0900
Variable Temperature Trap
See 0650

TRAVELING WAVE TUBES
Gyrotron Traveling-Wave Device Including Quarter Wavelength Anti-Reflective Dielectric Layer to Enhance Microwave Absorption
See 0365

TREPHINE
Guided Trephine Samples for Skeletal Bone Studies
See 0858

TRICHINOSIS
Diagnostic Reagent for Swine Trichinosis
See 0005

TRICHODERMA VIRIDE
Strain of 'Trichoderma viride' to Control Fusarium Wilt
See 0948

TRICHOGRAMMA PRETIOSUM
Ovipositional Stimulant for Trichogramma Spp
See 0933

TRIDECANONE + METHYL
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

TRIGGER CIRCUITS
High or Low-Side Solid State Relay with Current Limiting and Operational Testing
See 0259

TRIODES
Textured Carbon Surfaces on Copper
See 0770

TROPICAL REGIONS
Quarantine System for Papaya
See 0943

TROPOSPHERIC SCATTER COMMUNICATIONS
Tropospheric Scatter Communication System Having Angle Diversity
See 0116

TRYPANOSOMA CRUZI
Lysis of 'Trypanosoma Cruzi'
See 0921

TUBES
Apparatus for Producing Diamond-Like Carbon Flakes
See 0755
Method for Uniformly Bending Conduits
See 0716

TUNABLE LASERS
New Free Electron Laser Using a Relativistic Beam with Spiralling Electron
See 1013

TUNGSTEN CARBIDES
Formation of Tungsten Monocarbide from a Molten Tungstate-Halide Phase by Gas Sparging
See 0840

TUNING
Aircraft Rotor Blade with Passive Tuned Tab
See 1099

TUNING DEVICES
Image Line Voltage Controlled Oscillator with Replaceable Components
See 0263
Integrated Varactor Tuned Coaxial Gunn Oscillator for 60 GHz Operation
See 0265
Method for Tuning a Phased Array Antenna
See 0231
Wavelength Dependent, Tunable, Optical Time Delay System for Electrical Signals
See 0386
Wavelength Selective Demultiplexer Tuner
See 0300

TURBINES
Improved Temperature Detection System for Use on Film Cooled Turbine Airfoils
See 0562

TURBOFAN ENGINES
Length Adjustable Strut Link with Low Aerodynamic Drag
See 0148

TURBOMACHINERY
Damping Seal for Turbomachinery
See 0742

TURBULENCE
Turbulence Measurement Interferometer Apparatus
See 0646

TWO-PHASE FLOW
Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
See 0491

ULTRAHIGH VACUUM
Precision Manipulator Heating and Cooling Apparatus for Use in UHV (Ultrahigh Vacuum) Systems with Sample Transfer Capability
See 0681

ULTRASONIC BEAMS
Apparatus for Generating a Focusable and Scannable Ultrasonic Beam for Non-Destructive Examination
See 0499

ULTRASONIC RADIATION
Apparatus for Generating a Focusable and Scannable Ultrasonic Beam for Non-Destructive Examination
See 0499
Dual Differential Interferometer
See 0525
Laser Generation of Ultrasonic Waveform Reconstructions
See 0567
Laser Generation of Ultrasonic Waveform Reconstructions
See 1049
Method for Thermal Monitoring Subcutaneous Tissue
See 0868

ULTRASONIC TESTING
Ultrasonic Shear Wave Couplant
See 0648

ULTRASONIC TESTS
Systems for Monitoring Changes in Elastic Stiffness in Composite Materials
See 0635

ULTRASONIC THERAPY
Ultrasonic Therapy Applicator That Measures Dosage
See 0880

ULTRASONIC WAVE TRANSDUCERS
Apparatus for Disintegrating Kidney Stones
See 0849

ULTRASONICS
Dual Differential Interferometer
See 0525
Method for Thermal Monitoring Subcutaneous Tissue
See 0868
Method for Ultrasonic Bonding to Soft Microelectronic Substrates
See 0715
Superlattice Ultrasonic Wave Generator
See 1069

ULTRAVIOLET DETECTORS
Means and Method for Calibrating a Photon Detector Utilizing Electron-Photon Coincidence
See 0174

ULTRAVIOLET EQUIPMENT
Optical Non-Line-of-Sight Covert, Secure High Data Communication System
See 0105

ULTRAVIOLET LASERS
Vacuum Ultraviolet Laser
See 1025

UNDERGROUND MINING
Extensible Brattice Support System for Mine Face Ventilation
See 0954

UNDERWATER DATA RECORDING SYSTEM
Remote Self-Contained Undersea Monitor
See 0736

UNDERWATER LIGHT
Expendable Bathythermograph for Measuring Light Attenuation and Temperature Below the Ocean Surface
See 0731

UNDERWATER SOUND EQUIPMENT
Deep Ocean Wide Band Acoustic Baffle
See 0162

UNDERWATER TOOLS
Deep Submergence Vehicle (DSV) Lightweight Cable Cutter,
See 0729

UNINTERRUPTABLE POWER GENERATION
Autonomous Uninterruptable Power Supply Apparatus
See 0447

UNSATURATION (CHEMISTRY)
Stabilized Unsaturated Polyesters
See 0082

UPWELLING
Salinity Driven Oceanographic Upwelling
See 0023

URANIUM
Separation of Uranium from Technetium in Recovery of Spent Nuclear Fuel
See 0037

URANIUM DEPOSITS
Prospecting by Sampling and Analysis of Airborne Particulates and Gases
See 0962

URANIUM HEXAFLUORIDE
UF Sub 6 -Recovery Process Utilizing Desublimation
See 0039

UREAS
Granulation of Urea Phosphate from Urea and Merchant-Grade Phosphoric Acid
See 0007

URINE
Purification of Uromodulin
See 0893

UROMODULIN
Purification of Uromodulin
See 0893

VACCINES
Vaccine Against Neisseria Meningitidis Group B Serotype 2 Invasive Disease
See 0951
Vaccine against Rotavirus Diseases
See 0952

VACUUM
Spray Applicator for Spraying Coatings and Other Fluids in Space
See 0687

VACUUM DEPOSITION
Apparatus for Producing Diamond-Like Carbon Flakes
See 0755
Diamondlike Flakes
See 0758

VACUUM SEALS
Cryogenic Glass-to-Metal Seal
See 0741
High Temperature Ultra-High Vacuum Infrared Window Seal
See 1005

VACUUM SYSTEMS
Remote Controlled Vacuum Joint Closure Mechanism
See 0155

VALVES
Disc Valve for Sampling Erosive Process Streams
See 0521
In-Situ Annular Face Grinder
See 0668
Moisture Content and Gas Sampling Device
See 0594
Reactant Pressure Differential Control for Fuel Cell Gases
See 0475

VANADIUM
Method for Preparing High Purity Vanadium
See 0808

VANADIUM ALLOYS
Long Range Ordered Alloys Modified by Addition of Niobium and Cerium
See 0803

VAPOR DEPOSITED COATINGS
Method and Apparatus for Conducting Variable Thickness Vapor Deposition
See 0806

VAPOR DEPOSITION
Alloys and Method of Making
See 0796
Corrosion Resistant Coating
See 0800
Method for the Preparation of Epitaxial Films of Mercury Cadmium Telluride
See 0175
Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch
See 0035
Recovery of Fragile Layers Produced on Substrates by Chemical Vapor Deposition
See 1096

VAPOR PHASES
Technique of Assembling Structures Using Vapor Phase Soldering
See 0726

VAPOR PLATING
Photoionization Technique for Growth of Metallic Films
See 0719

VAPORIZERS
Continuous Laminar Smoke Generator
See 0514

VARACTOR DIODES
Apparatus for Non-Destructive Inspection of Blind Holes
See 0500
Integrated Varactor Tuned Coaxial Gunn Oscillator for 60 GHz Operation
See 0265

VEGETABLE OILS
Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
See 0015
Microemulsions from Vegetable Oil and Lower Alcohol with Octanol Surfactant as Alternative Fuel for Diesel Engines
See 0396

VELOCITY MEASUREMENT
Improved Fluid Flow Meter for Measuring the Rate of Fluid Flow in a Conduit
See 0560

VENTILATION
Extensible Brattice Support System for Mine Face Ventilation
See 0954

VERY HIGH SPEED INTEGRATED CIRCUITS
Optoelectronic Integrated Circuit Multiplier
See 1066

VERY LARGE SCALE INTEGRATION
Method of Examining Microcircuit Patterns
See 0344
Split-Cross-Bridge Resistor for Testing for Proper Fabrication of Integrated Circuits
See 0725

VERY LARGE SCALE INTEGRATION.
Method of Characterizing Critical Timing Paths and Analyzing Timing Related Failure Modes in Very Large Scale Integrated Circuits
See 0588

VERY LARGE SCALE INTEGRATIONS
Optoelectronic Integrated Circuit Multiplier
See 1066

VIBRATION
Apparatus for Disintegrating Kidney Stones
See 0849
Vibration Dosimeter
See 0882

VIBRATION DAMPING
Variable Force, Eddy-Current or Magnetic Damper
See 0690
Variable Friction Secondary Seal for Face Seals
See 0754

VIBRATION ISOLATORS
Aircraft Rotor Blade with Passive Tuned Tab
See 1099
Variable Force, Eddy-Current or Magnetic Damper
See 0690
Vibration Isolated Cold Plate Assembly
See 0694
Vibration Isolator Actuator
See 0695

VIBRATION MEASUREMENT
Emitted Vibration Measurement Device and Method
See 0533

VIBRATORS(MECHANICAL)
Precise Bearing Support Ditherer
See 0679
Precise Bearing Support Ditherer with Piezoelectric Drive Means
See 0680

VIDEO SIGNALS
Extracting Digital Data from a Bus and Multiplexing It with a Video Signal
See 0978
Television Camera Video Level Control System
See 0113
Three-Stage Binary Coincidence Detector Apparatus with Adaptive Constant False Alarm Rate
See 0114

VIEWING
Double Window Viewing Chamber Assembly
See 0522

VIRAL DISEASES
Sensitive and Rapid Diagnosis of Viroid Diseases and Viruses
See 0946
Vaccine against Rotavirus Diseases
See 0952

VIRUS DISEASES
Monoclonal Antibodies to Epizootic Hemorrhagic Disease Virus Antigen
See 0928

VIRUSES
Production of Human T-Cell Leukemia (Lymphotropic) Retrovirus (HTLV-I) Envelope Protein Fragments in Bacteria and Use in Seroepidemiological Survey of Human Lymphoid Malignancies
See 0940
Screening Test for Reverse-Transcriptase Containing Virus
See 0945
Therapeutic and Diagnostic Monoclonal Antibody Specific for Human T-Cell Leukemia Virus Type 1 Envelopes Protein
See 0950

VISCOSITY
Method for Controlling the Viscosity of Siloxane Oils
See 0842

VISION
Retinally Stabilized Differential Resolution Television Display
See 0181
Vision Test Chart and Method Using Gaussians
See 0883

VISUAL PERCEPTION
Measurement of Visual Contrast Sensitivity
See 0922

VOICE COMMUNICATIONS
Secure Digital Speech Communication
See 0108

VOICE DATA PROCESSING
Method and Apparatus for Operating on Companded PCM (Pulse Code Modulation) Voice Data
See 0102

VOLTAGE CONTROLLED OSCILLATORS
Analog to Digital Converter
See 0237
Image Line Voltage Controlled Oscillator with Replaceable Components
See 0263

VOLTAGE CONVERTERS (DC TO DC)

Wide-Band Phase Locked Loop Amplifier Apparatus
See 0301

VOLTAGE CONVERTERS (DC TO DC)

Simplified DC to DC Converter
See 0289

VOLTAGE REGULATION

Output Responsive Field Control for Wind-Driven Alternators and Generators
See 0472

VOLTAGE REGULATORS

High Voltage Isolation Transformer
See 0324

VORTEX GENERATORS

Vortex Generating Flow Passage Design for Increased Film Cooling Effectiveness
See 1098

WAFERS

Apparatus for Etching Vertical Junction Solar Cell Wafers
See 0698

Epitaxial Thinning Process
See 0702

Ingot Slicing Machine and Method
See 0669

Lithium Counterdoped Silicon Solar Cell
See 0433

Mask Aligner for Solar Cell Fabrication
See 0672

Process and Apparatus for Growing a Crystal Ribbon
See 0034

WALLS

Apparatus and Method to Keep the Walls of a Free-Space Reactor Free from Deposits of Solid Materials
See 0496

Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
See 0578

WASHING

Shale Oil Dearsenation Process
See 0399

WASTE HEAT UTILIZATION

Woven Heat Exchanger
See 0430

WASTE UTILIZATION

Membrane Processes for Separation of Organic Acids from Kraft Black Liquors
See 0841

WATER

Apparatus for Determining the Liquid Water Content of a Gas
See 0497

Water Toxicity Field Test System
See 0953

WATER POLLUTION CONTROL

Membrane Processes for Separation of Organic Acids from Kraft Black Liquors
See 0841

WATER POLLUTION DETECTION

Soil Extraction Kit
See 0627

WATERFLOODING

Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
See 0960

WAVE ANALYZERS

Magnetostatic Wave Frequency Analyzer Apparatus
See 0575

WAVE POWERED GENERATORS

Wave Powered Buoy Generator
See 0739

WAVE PROPAGATION

Double Reference Pulsed Phase Locked Loop (Drp-2L-2)
See 0096

WAVE RESISTANCE

Reactanceless Synthesized Impedance Bandpass Amplifier
See 0282

WAVEFORM GENERATORS

Laser Generation of Ultrasonic Waveform Reconstructions
See 1049

WAVEFORMS

Secure Digital Speech Communication
See 0108

WAVEGUIDE FILTERS

Dual Mode Directionally Coupled Band Reject Filter Apparatus
See 0249

WAVEGUIDE LASERS

Ground Slot Waveguide Laser
See 1000

Multiple Parallel RF Excited CO2 Lasers
See 1012

WAVEGUIDES

Frequency-Spreading Coupler
See 0256

WEAR

Ion-Beam Nitriding of Steels
See 0707

Rotating Tool Wear Monitoring Apparatus
See 0684

WEAR RESISTANCE

Wear Improvement in Titanium Alloys by Ion Implantation
See 0817

WEBS (SHEETS)

Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

WEED CONTROL

Control of Eastern Black Nightshade with a Fungal Pathogen
See 0003

Nonabsorbent Roller Applicator
See 0931

WEIGHT MEASUREMENT

Portable Pallet Weighing Apparatus
See 0609

WELDED JOINTS

Gas Shielding Apparatus
See 0667

WELDING

Alignment and Assembly Tool for Very Large Diameter Cylinders
See 0654

WELLS

Method for Isolating Two Aquifers in a Single Borehole
See 0467

WETTING

Wet Film Applicator
See 0696

WHEATSTONE BRIDGES

Instrumentation for Sensing Moisture Content of Material Using a Transient Thermal Pulse
See 0564

WHEELCHAIRS

Integrated Wheelchair and Ambulator
See 0863

WHEELS

Non-Backdriveable Free Wheeling Coupling
See 0675

WHITE LIGHT

System of White-Light Density Pseudocolor Encoding with Three Primary Colors
See 1070

WICKS

Heat Pipe Wick
See 0410

Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417

WIND PROFILES

Method and Apparatus for Four-Beam Radar
See 0200

WIND TUNNEL MODELS

Model Mount System for Testing Flutter
See 0592

WIND VELOCITY

Method and Apparatus for Four-Beam Radar
See 0200

WINDING MACHINES

Apparatus Producing Constant Cable Tension for Intermittent Demand
See 0656

WINDMILLS (WINDPOWERED MACHINES)

Coupling an Induction Motor Type Generator to AC Power Lines
See 0455

WINDOWS (APERTURES)

Double Window Viewing Chamber Assembly
See 0522

WINDPOWERED GENERATORS

Output Responsive Field Control for Wind-Driven Alternators and Generators
See 0472

WINGS

Piezoelectric Deicing Device
See 1112

Remote Pivot Decoupler Pylon: Wing/Store Suppression
See 1113

WIRE

Apparatus for Disintegrating Kidney Stones
See 0849

Contact Insertion and Wire Lay Robotic End Effector Apparatus
See 0661

Method and Apparatus for Detecting Acoustic Emissions from Metal Matrix Wire
See 0577

WIRING

Phase Sensitive Guidance Sensor for Wire-Following Vehicles
See 0972

WOOD

Wood Beam
See 0848

WORMS

Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052

WRAPPING MACHINES

Wrapping Machine
See 0697

WRINKLING

Abrasion-Resistant Durable-Press Acrylic Finishes for Cotton Textiles by Use of Nonoxidative Polymerization Initiators and Accelerators in Two-Stage Heat Curing
See 0790

Mild-Cure Formaldehyde-Free Durable-Press Finishing of Cotton Textiles with Glyoxal and Glycols
See 0791

RADIATION
Diamond-Anvil High-Pressure Cell with Improved X-Ray Collimation System
See 0520

-RAY DETECTION
Microchannel Plate Streak Camera
See 0590

RAY LASERS
Device for Cryogenically Fabricating Source Material for Plasma X-ray Lasers
See 0995

RAY SPECTROMETERS
Imaging X-Ray Spectrometer
See 0556
Time Resolved Extended X-Ray Absorption Fine Structure Spectrometer
See 0641

RAY TUBES
Multi-Color X-Ray Line Source
See 1059

X RAYS
Three-Dimensional and Tomographic Imaging Device for X-ray and gamma-Ray Emitting Objects
See 0640

XANTHAN
Method of Making Stable Emulsified Meat Products
See 0014

XANTHINE AMINOETHYLAMIDE+(CARBOXYMETHYLOXYPHENYL) DIPROPYL
Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056

XANTHINES
Biologically-Active Xanthine Derivatives
See 0045

XENON
Double Photon Excitation of High-Rydberg Atoms as a Long-Lived Submillimeter Detector
See 0169

XYLENES
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

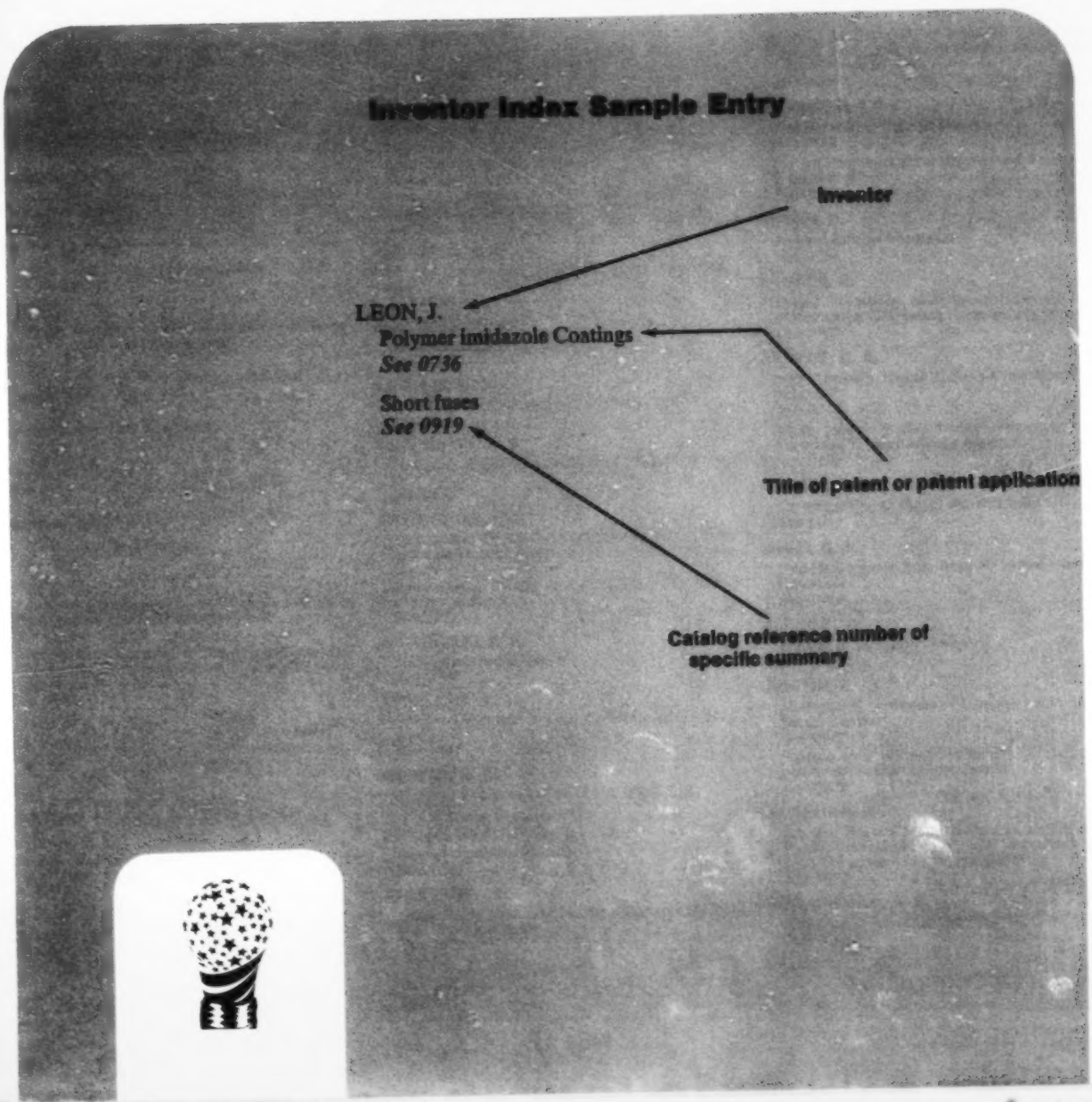
YTTERBIUM COMPOUNDS
Improved Thermal Barrier Coating System
See 0761

ZETA POTENTIAL
Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586

ZIRCONIUM BASE ALLOYS
Manufacturing Process to Reduce Large Grain Growth in Zirconium Alloys
See 0804

ZIRCONIUM OXIDES
Improved Thermal Barrier Coating System
See 0761

Inventor Index



INVENTOR INDEX

ABRAMS, R. L.
Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
See 1047

ACHAR, B. N.
Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828
Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057
Phthalocyanine Polymers
See 0068

ADAMSKI, J. A.
Method for Synthesizing Indium Phosphide
See 1091

ADDAMIANO, A.
Liquid Phase Epitaxy (LPE) of Silicon Carbide
See 1086
Method of Preparing Single Crystalline Cubic Silicon Carbide Layers
See 1093
Recovery of Fragile Layers Produced on Substrates by Chemical Vapor Deposition
See 1096

ADRIAN, D. J.
Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

AGRAWAL, A. K.
Multicomputer Communication System
See 0103

AGUIRRE, D. G.
Measurement of Permittivity and Permeability of Microwave Materials
See 0576

AHERN, AHERN.
Heat Pipe and Method of making same
See 0409

ALARIO, J. P.
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413
Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417
Multi-Leg Heat Pipe Evaporator
See 0418

ALBARES, D. J.
Optoelectronic Integrated Circuit Multiplier
See 1066

ALCORN, G. E.
Imaging X-Ray Spectrometer
See 0556

ALDISSI, M.
Electrically Conductive Doped Block Copolymer of Polyacetylene and Polyisoprene
See 0820
Electron-Donor Dopant, Method of Improving Conductivity of Polymers by Doping Therewith, and a Polymer So Treated
See 0821

ALDRICH, J. R.
Soil Extraction Kit
See 0627

ALLEN, C. W.
(Vinyloxy)Chlorocyclotriphosphazenes
See 0040

ALTMAN, D. E.
Optical Non-Line-of-Sight Covert, Secure High Data Communication System
See 0105

ALTMAN, R. G.
Sampling Device
See 0875

ALTSCHULER, B. R.
Method and Apparatus for Generating a Structured Light Beam Array
See 1056

AMES, G. F.
Method for Obtaining Periplasmic Proteins from Bacterial Cells Using Chloroform
See 0924

ANDERS, J. B.
Combined Riblet and Lebu Drag Reduction System
See 0727

ANDERSEN, R. N.
Control of Eastern Black Nightshade with a Fungal Pathogen
See 0003

ANDERSON, L. M.
Inelastic Tunnel Diodes
See 0341
Solar Energy Converter Using Surface Plasma Waves
See 0440

ANDERSON, M. E.
Spectrophotometric Method for Simultaneously Analyzing Protein and Fat Contents in Milk
See 0024

ANDERSON, W. T.
Radiation Hardened Ion-Implanted GaAs Field Effect Transistor and Method for Making the Same Specification
See 0350

ANDREWS, B. K.
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0793
Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0794

ANDREWS, D. H.
UF Sub 6 -Recovery Process Utilizing Desublimation
See 0039

ANDREWS, W. H.
Capacitance Measuring Device
See 0507

ANGULO, E. D.
Apparatus for Disintegrating Kidney Stones
See 0849

ANTONUCCI, J. D.
Conformal Phased Array Antenna Pattern Corrector
See 0190

ANTONUCCI, J. M.
Hydrophobic Dental Composites Based on a Polyfluorinated Dental Resin
See 0910
Non-Aqueous Dental Cements Based on Dimer and Trimer Acids
See 0748

ANTONUZZI, A. P.
Electromechanical Switch
See 0307

APPELL, H. R.
Solvent Treatment of Coal for Improved Liquefaction
See 0401

AQUINO, D. C.
Fluidized Bed Gasification of Extracted Coal
See 0388

ARCHAMBEAULT, B. R.
Optical Mark Reader
See 1063

ARMITAGE. , D.
Spatial Light Modulator Having a Capacitively Coupled Photoconductor
See 1068

ARMITAGE, D.
Charge Isolation in a Spatial Light Modulator
See 1032
Differentiating Spatial Light Modulator
See 1034
Electron-Bombarded Silicon Spatial Light Modulator
See 1039
Real Time Data Smoother and Significant Values Selector
See 0134

ARNOLD, C.
Radiation-Hardened Polymeric Films
See 0834

ARNOLD, F. E.
Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
See 0051

ARNOLD, M. F.
Portable Reclining Examination Chair
See 0873

ARTHUR, A. A.
Broad-Band Beam Buncher
See 0358

ASPREY, L. B.
Method for Recovery of Actinides from Actinide-Bearing Scrap and Waste Nuclear Material Using O sub 2 F sub 2
See 0032

ASSARD, G. L.
Precise Bearing Support Ditherer
See 0679
Precise Bearing Support Ditherer with Piezoelectric Drive Means
See 0680

ASTON, G.
Hollow Cathode Apparatus
See 0554

ATHALE, R.
Spatial Frequency Multiplexed Coherent Optical Processor for Calculating Generalized Moments
See 1067

ATHALE, R. A.
High Accuracy Digital Acousto-Optic Matrix Computer
See 1044
Triple Matrix Product Optical Processors Using Combined Time-and-Space Integration
See 0135

AUCOIN, T. R.
Monolithic Planar Doped Barrier Limiter
See 0346

AULD, B. A.
Two-Dimensional Bulk Acoustic Wave Correlator-Convolver
See 0299

AULD, F. W.
Pneumatic Clamping Device
See 0153

AUSTIN, F.
Monoclonal Antibodies Reactive with Human Breast Cancer
See 0927
Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
See 0938

AUYEUNG, J.
Ranging System Which Compares an Object Reflected Component of a Light Beam to a Reference Component of the Light Beam
See 0616

AZGAPETIAN, A. M.
Acoustically Tuned Optical Filter System
See 1028

INVENTOR INDEX

AZGAPETIAN, V.

AZGAPETIAN, V.
Acoustically Tuned Optical Filter System
See 1028

BABICH, J. W.
New Method for the Selective Labeling of Erythrocytes in Whole Blood with Tc-99M
See 0930

BACKLUND, J. G.
Integrated Paratroop Door
See 1108

BAGLIN, E. G.
Formation of Tungsten Monocarbide from a Molten Tungstate-Halide Phase by Gas Sparging
See 0840

BAILEY, D. G.
Process and Compositions for Preserving Fresh Hides and Skins
See 0846

BALES, T. T.
Curved Cap Corrugated Sheet
See 1102

BALL, D.
Ovipositional Stimulant for Trichogramma Spp
See 0933

BALLARD, L. D.
Piezoelectric Polymer Heat Exchanger
See 0422

BALLATO, A.
Adjustment of the Frequency-Temperature Characteristics of Crystal Oscillators
See 0236
Chemical Sensor Matrix
See 0511
Compensation of Acoustic Wave Devices
See 1084
Cylindrical Crystal Resonator
See 0321
Dielectric Resonator
See 0322
Improved Chemical Sensor Matrix
See 0558
Method of Fabricating Acceleration Resistant Crystal Resonators and Acceleration Resistant Crystal Resonators so Formed
See 0330
Microwave Bandstop Filter
See 0271
Microwave Resonator Using Lateral Excitation
See 0332
Microwave SAW (Surface Acoustic Wave) Monochromator
See 0333
Normal Coordinate Monolithic Crystal Filter
See 0335
Stress Compensation Crystal Device
See 0337
Surface Acoustic Wave Device for Sensing the Presence of Chemical Agents
See 0633

BALLATO, A. D.
Acceleration Resistant Combination of Opposite-Handed Piezoelectric Crystals
See 0315

BALSA, T. F.
Gas Recirculator for Acyclic Machines
See 0308

BAMBERGER, C. E.
Method for Removing Oxide Contamination from Silicon Carbide Powders
See 0844

BANKS, B.
Piezoelectric Deicing Device
See 1112

BANKS, B. A.
Apparatus for Producing Diamond-Like Carbon Flakes
See 0755
Deposition of Diamondlike Carbon Films
See 0757
Diamondlike Flakes
See 0758
Oxidation Protection Coatings for Polymers
See 0764

BARAONA, C. R.
Screen Printed Interdigitated Back Contact Solar Cell
See 0439

BARMATZ, M. B.
Acoustic Particle Separation
See 0030
High Temperature Acoustic Levitator
See 0703

BARRETT, T. W.
Optical 3-D Signature Device for Detecting Chemical Agents
See 0604

BARTOSEVICH, J. F.
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889

BATES, A. M.
Programmable Multichannel Sonobuoy Transmitter
See 0164

BATES, C.
Helmet Mounted Telescope
See 1043

BATTS, C. N.
Comparator with Noise Suppression
See 0243

BAUGH, B. T.
Precision Manipulator Heating and Cooling Apparatus for Use in UHV (Ultrahigh Vacuum) Systems with Sample Transfer Capability
See 0681

BEAM, J. E.
Heat Pipe Wick
See 0410

BEAN, M. M.
Method for Preparing Improved Quality Rice-Containing Baked Products
See 0011

BEAN, V. E.
High Pressure Liquid Level Monitor
See 0552

BECKER, J. O.
Method for Screening Bacteria and Application Thereof for Field Control of Pythium spp. on Small Grain Crops
See 0013

BECKER, J. W.
Brush and Commutator Segment Torquer Motor
See 0303

BEENE, J. R.
Device for Frequency Modulation of a Laser Output Spectrum
See 0996

BEGGS, J. M.
Insulation Bonding Test System
See 0565

BEHERS, R. G.
Extensible Brattice Support System for Mine Face Ventilation
See 0954

BEHL, W. K.
Rechargeable Lithium-Organic Electrolyte Battery Having Overcharge Protection and Method of Providing Overcharge Protection for a Lithium-Organic Electrolyte Battery
See 0477

BEKEFI, G.
Rippled-Field Magnetron Apparatus
See 0383

BELLMAN, B. M.
Clock Distribution Circuit for Active Aperture Antenna Array
See 0219

BELLMORE, N.
Wide Angle Phased Array Dome Lens Antenna with a Reflection/Transmission Switch
See 0235

BELTON, J. P.
Precision Digital Sampler
See 0277

BEMIS, C. E.
Device for Frequency Modulation of a Laser Output Spectrum
See 0996

BENDER, G. M.
Pulse Transformer Package for Impedance Matching a Laser Diode to a Transmission Line
See 1018

BENKE, G.
Secure Digital Speech Communication
See 0108

BENNER, W. H.
Oxygen Analyzer
See 0606

BENNETT, G. A.
Thermal Protection Apparatus
See 0481

BENNETT, G. W.
Nuclear Medicine Imaging System
See 0869

BENSON, D. K.
Silicon Nitride Protective Coatings for Silvered Glass Mirrors
See 0769
Thermoelectric Generator and Method for the Fabrication Thereof
See 0484

BERDAHL, C. M.
Fluidic Angular Velocity Sensor
See 0545

BERDAHL, P. H.
Solid State Radiative Heat Pump
See 0426

BERKOWITZ, D.
Freeze Dried Raw Meats
See 0006

BERKOWITZ, J.
Vacuum Ultraviolet Laser
See 1025

BERLINCOURT, T. G.
Rotating Squid Magnetometers and Gradiometers
See 0621

BERROU, J. L.
Nonlinear Technique for High-Resolution Data Processing
See 0132

BERRY, A. D.
Low Temperature Deposition of Nickel Films
See 0709

BERTHEL, R. O.
Fall Velocity Indicator/Viewer
See 0535
Snow Scale/Rate Meter
See 0626

BEUHLER, R. J.
Method of Precisely Modifying Predetermined Surface Layers of a Workpiece by Cluster Ion Impact Therewith
See 0810

BICKLER, D. B.
Increased Voltage Photovoltaic Cell
See 0432

BIERIG, R. W.
Interdigital Schottky Barrier Capacitor Apparatus
See 0326

BILEK, F. V.
Deployable Folded Antenna Apparatus
See 0221

BINDER, M.
Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451
Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

BIRNBAUM, M.
Total Internal Reflection Modulator/Deflector
See 1075

BISHOP, W. S.
Battery Control and Fault Detection Method
See 0449

BISS, M. S.
Flexible Line Support Assembly
See 0142

BITNER, E. D.
Electronic Temperature Equalizer
See 0532

BIZAIS, Y. J. C.
Nuclear Medicine Imaging System
See 0869

BLACKBURN, L. B.
Tensile Testing Apparatus
See 0637

BLAKE, R. D.
Sodium Nitrate Containing Mixture for Producing Ceramic-Glass-Ceramic Seal by Microwave Heating
See 0752

BLANK, M. L.
Antihypertensive Neutral Lipid
See 0041

BLODGETT, J. A.
Spatial Frequency Multiplexed Coherent Optical Processor for Calculating Generalized Moments
See 1067

BLOMQUIST, D. S.
Rotating Tool Wear Monitoring Apparatus
See 0684

BLUME, A. E.
Low Sidelobe Phased Array Antenna System
See 0198

BLUZER, N.
Dual Drain MOSFET Detector for Crosstie Memory Systems
See 0125

BOBB, L. C.
Fiber Optic System for Measuring Electric Fields
See 0542

BOCKER, R. P.
Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040
Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
See 1054

BODINE, F. R.
Stereoscopic Video Imagery Generation
See 0987

BOENIG, H. J.
Superconducting Magnetic Energy Storage for Asynchronous Electrical Systems
See 0480

BOLAND, J. F.
Control System for Fluid Heated Steam Generator
See 0405

BOLSTAD, J. O.
Electronic Imaging System and Technique
See 0363

BOMBERGER, H. B.
Method for Making Alloy Additions to Base Metals Having Higher Melting Points
See 0807

BONDESON, A.
Quasioptical Gyroklystron
See 0382

BONSER, W.
Programmable Synchronous Digital Delay Line
See 0279

BOOKER, R. P.
Advanced Cube Processor
See 1029

BOOS, J. B.
TiW Diffusion Barrier for AuZn Ohmic Contacts to P-Type InP
See 0353

BORDEN, A. R.
Method to Improve Superconductor Cable
See 0373
Multistrand Superconductor Cable
See 0376

BORGARDT, B.
Captive Volume Device as a Safe Life Monitor
See 0508

BORSIG, E.
Stabilized Unsaturated Polyesters
See 0082

BOTTKA, N.
Method for the Deposition of High-Quality Crystal Epitaxial Films of Iron
See 1092

BOYLE, J. W.
Integrated Varactor Tuned Coaxial Gunn Oscillator for 60 GHz Operation
See 0265

BRANDENBURGER, G. H.
Method for Thermal Monitoring Subcutaneous Tissue
See 0868

BRANDHORST, H. W.
Lithium Counterdoped Silicon Solar Cell
See 0433

BRANDT, D.
Gas Shielding Apparatus
See 0667

BRAUER, G. M.
Biocompatible Cementitious Dental Compositions
See 0740

BRECKINRIDGE, J. B.
Optical System
See 1065

BREGOLI, L. J.
Integrated Current Collector and Catalyst Support
See 0464

BRESCH, J. R.
Suture Needle Holder
See 0878

BRICKMAN, F. E.
Shale Oil Dearsenation Process
See 0399

BRICKS, B. G.
High Power Metal Vapor Laser
See 1004

BRIGHT, R.
(Vinyloxy)Chlorocyclotriphosphazenes
See 0040

BRILL, A. B.
Nuclear Medicine Imaging System
See 0869

BRISTOL, R. I.
Dual Electrochemical System
See 0456

BROADWELL, J. E.
Delta Wing Nozzle Assembly for Chemical Lasers
See 0994

BROCK, R. H.
Radar Calibration Using Direct Measurement Equipment and Oblique Photometry
See 0211

BRODER, S.
Therapeutic and Diagnostic Monoclonal Antibody Specific for Human T-Cell Leukemia Virus Type 1 Envelopes Protein
See 0950

BRODZINSKI, R. L.
Measurement of Radionuclides in Waste Packages
See 0027

BROMLEY, K.
Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040
Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
See 1054

BROSSI, A.
Antiinflammatory 2,3-Didemethylcolchicine and Derivatives
See 0885
Carbamates of Colchicine for Treatment of Gout
See 0046

BROWN, B. G.
Implantation Device for Use In vivo Stimulation and Collection of Monocytes from Peritoneum of Vertebrate
See 0860

BROWN, D. P.
Combined Cold Compressor/Ejector Helium Refrigerator
See 0404

BROWN, E. H.
Echometry Device and Method
See 0528

BROWN, G. E.
Isoelectric Focussing-Polynucleotide/Polyacrylamide Gel Electrophoresis
See 0917

BROWN, J. L.
LDV(Lase Doppler Velocimeter) Multiplexer Interface
See 0100

BROWN, R. F.
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413
Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417

BRUDNOY, D. M.
Dual Beam Translator for Use in Laser Doppler Anemometry
See 0524

BRUGGER, J. E.

BRUGGER, J. E.
Method and Apparatus for Generating Monopulse Ultrasonic Signals
See 0270

BRUMBAUGH, C. T.
Dual Mode Radio Frequency-Infrared Frequency System
See 0968

BRYANT, G. H.
Electrolytic Pressure Transduction System
See 0855

BRYANT, S. M.
Adaptive Fast Fourier Transform Weighting Technique to Increase Small Target Sensitivity
See 0185
Gain Restoration after Doppler Filtering
See 0195
Technique for Rapid Determination of Probability of Detection in Pulse Doppler Radars
See 0215

BRYNESTAD, J.
Method for Removing Oxide Contamination from Silicon Carbide Powders
See 0844

BUCARO, J. A.
Optical Fibers with Reduced Pressure Sensitivity to High Frequency Acoustic Field
See 1062
Temperature-Insensitive Optical Fibers
See 1073

BUCKLEY, J. D.
Induction Heating Gun
See 0414

BUCKO, T. G.
Test Device for Expendable Bathythermograph Set (XBT)
See 0638

BUEHLER, M. G.
Split-Cross-Bridge Resistor for Testing for Proper Fabrication of Integrated Circuits
See 0725

BUELL, D. N.
Deployable Folded Antenna Apparatus
See 0221

BUHOLZ, N. E.
CO2 Laser Stabilization and Switching
See 0993

BULLOCK, J. S.
Electrolytic Cell
See 0531

BUNCH, R. H.
Fault Finder
See 0537

BUNKER, J. W.
Slide Release Mechanism
See 0157

BUR, A. J.
Dynamic Polymer Pressure Transducer with Temperature Compensation
See 0526

BURGARDT, P.
Control of Gas Tungsten Arc Welding Pool Shape by Trace Element Addition to the Weld Pool
See 0700

BURKE, E. J.
Wood Beam
See 0848

BURKE, T. R.
Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

BURKE, W. F.
Remote Temperature-Set-Point Controller
See 0619

BURKETT, B. E.
Tracking Servo Compensator with Rate Aiding
See 0217

BURKHOLDER, W. E.
Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

BURKLUND, P. W.
Method for Isolating Two Aquifers in a Single Borehole
See 0467

BURNS, D. J.
Method of Characterizing Critical Timing Paths and Analyzing Timing Related Failure Modes in Very Large Scale Integrated Circuits
See 0588

BURNS, W. K.
Bragg Cell Spectrum Analyzer Specification
See 1031

BURROWS, J. L.
Tally Cell Circuit
See 0295
Variable Radix Processor
See 0137

BUSH, H. G.
Self-Locking Mechanical Center Joint
See 0685

BUSH, I. J.
Phase-Lock Fiber Optic Interferometer
See 0607

BYRNE, F.
Method and Apparatus for Operating on Companded PCM (Pulse Code Modulation) Voice Data
See 0102

BYVIK, C. E.
Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586

CADDY, M. J.
Computer-Aided Process for Generating Camera-Ready Graphical Artwork
See 0121

CAHEN, D.
Stable n-CuINSe/sub 2/Iodide-Iodine Photoelectrochemical Cell
See 0444

CALDWELL, H. D.
Monoclonal Antibodies Against Chlamydial Genus Specific Lipopolysaccharide
See 0890

CALDWELL, S. P.
Phase Lock Acquisition System
See 0275

CAMARDA, C. J.
Heat Pipe Cooled Probe
See 0549

CAMIRAND, W. M.
Method for Reducing Sodium Content and Simultaneously Increasing Potassium Content of a Food
See 0012

CAMPBELL, L. T.
Current Stabilized Underwater Platform
See 0728

CAMPBELL, T. G.
Aircraft Rotor Blade with Passive Tuned Tab
See 1099

CAMPOLI, A. A.
Self-Actuating Vacuum Gas/Liquid Separator
See 0963

CANGIALOSI, A.
Gyro Sensor Block Suspension
See 0970

CANTU, E.
Metallic Aid and Technique in Fitting Voice Prosthesis
See 0866
Metallic Aid and Technique in Fitting Voice Prosthesis
See 0867

CAPUTO, A. J.
Improved Process for the Preparation of Fiber-Reinforced Ceramic Composites by Chemical Vapor Deposition
See 0780

CAREY, A. A.
Method for Controlling the Viscosity of Siloxane Oils
See 0842

CARLE, G. C.
Modulated Voltage Metastable Ionization Detector
See 0593

CARLSON, D. A.
Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052
Novel Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0932

CARLSON, L. W.
Drying of Pulverized Material with Heated Condensible Vapor
See 0523

CARLSON, O. N.
Method for Preparing High Purity Vanadium
See 0808

CARRUTHERS, T. F.
Optically Triggered Transferred-Electron Device Microwave Burst and Single Pulse Generators
See 0273

CARSTENS, D. H. W.
Method and Apparatus for Measuring the Gas Permeability of a Solid Sample
See 0582

CARTER, B. J.
Adeno-Associated Virus as Eukaryotic Expression Vector
See 0898

CASSEN, J. W.
Loop Radiating Elements
See 0228

CAULFIELD, H. J.
Matrix-Matrix Multiplication Using an Electrooptical Systolic/Engagement Array Processing Architecture
See 1054

CAWLEY, J. D.
Oxidizing Seal for a Turbine Tip Gas Path
See 0749

CAWLEY, W. E.
On-Line Temperature Sensor
See 0601

CAZINHA, J. R.
In-Situ Annular Face Grinder
See 0668

CELENTINO, J. L.
Vehicle-to-Vehicle Connection Mechanism
See 0160

CERNIUS, R. K.
Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

CHADWICK, R. B.
Method and Apparatus for Four-Beam Radar
See 0200

CHAFFIN, R. J.
Field-Effect Transistor Having a Superlattice Channel and High Carrier Velocities at High Applied Fields
See 0339

CHAI, A. T.
Screen Printed Interdigitated Back Contact Solar Cell
See 0439

CHAIKEN, R. F.
Method for Controlled Burnout of Abandoned Coal Mines and Waste Banks
See 0416

CHAN, R. H. G.
Interactive Communication Channel
See 0099

CHANDLER, E. W.
Disc Valve for Sampling Erosive Process Streams
See 0521

CHANDLER, J. M.
Recirculating Wiper for Agricultural Chemicals
See 0021

CHANDLER, T. C.
Flow Measurement Device
See 0544

CHANG, E. L.
Magnetically-Localizable, Polymerized Lipid Vesticles and Method of Disrupting Same
See 0888

CHANG, I. C.
Tunable Acousto-Optic Filter with Improved Spectral Resolution and Increased Aperture
See 1077

CHANG, L. L.
Superlattice Ultrasonic Wave Generator
See 1069

CHEN, H. C.
Dimeric Enkephalins
See 0887

CHEN, S. C.
New Free Electron Laser Using a Relativistic Beam with Spiralling Electron
See 1013

CHEN, T. S.
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

CHEN, W. Y.
High Temperature Structural Insulating Material
See 0411

CHEN, Y. W.
Stable n-CuINSe/sub 2/Iodide-Iodine Photoelectrochemical Cell
See 0444

CHENAUSKI, P. P.
Multiple Parallel RF Excited CO2 Lasers
See 1012

CHENAUSKY, P.
Ground Slot Waveguide Laser
See 1000

CHENAUSKY, P. P.
Injection Controlled Laser Transmitter with Twin Local Oscillators
See 0173

CHERN, M. J.
Diffraction Diffusion Screen with Holographically-Suppressed Zero-Order Beam
See 1035

CHERRY, W. D.
RF-Primed High Power Halogen Vial Apparatus
See 0213

CHIANG, C. K.
Polyethylene Imine-Metal Salt Solid Electrolyte
See 0474

CHINO, J. J.
Electronic Module Insertion and Retraction Mechanism
See 0664

CHOUDHURY, A. N. M. M.
Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
See 1085

CHRISTE, K. O.
Method for Introducing Fluorine into an Aromatic Ring
See 0059
Pentafluorotelluriumoxide Fluorocarbons
See 0064

CHRISTIANSON, D. D.
Production of Food-Grade Corn Germ Product by Supercritical Fluid Extraction
See 0019

CHRISTMAN, C. L.
Ultrasonic Therapy Applicator That Measures Dosage
See 0880

CHRISTY, O. D.
Dual-Secondary Mirror Cassegrain Optical System
See 1037

CHU, M.
Liquid-Phase Epitaxial Growth of CdTe on HgCdTe
See 1087

CHUBB, C. R.
RF Laser Array Driver Apparatus
See 1020

CHUBB, D. L.
Thermionic Photovoltaic Energy Converter
See 0445

CHUBB, T. A.
Thermochemical Energy Transport Using a Hydrogen Rich Working Fluid
See 0483

CHURCH, R. H.
Short Range Trapped Miner Locator
See 0964

CHUTJIAN, A.
Double Photon Excitation of High-Rydberg Atoms as a Long-Lived Submillimeter Detector
See 0169

CISZEK, T. F.
Apparatus and Method for the Horizontal, Crucible-Free Growth of Silicon Sheet Crystals
See 1082
Method and Apparatus for Casting Conductive and Semi-Conductive Materials
See 0711

CLAPP, R. E.
Radio Frequency Lens Antenna
See 0233

CLARK, K. G.
Composition and Method for Cleaning Embedded Soil from Surfaces Having Low Gloss Coatings
See 0819

CLARK, K. H.
Hemispherical Latching Apparatus
See 0144

CLARKE, J.
Radiofrequency Amplifier Based on a DC Superconducting Quantum Interference Device
See 0281

CLATTERBUCK, C. H.
High Voltage Isolation Transformer
See 0324

CLAUS, R. O.
Dual Differential Interferometer
See 0525

CLAVELL, C.
Variable Temperature Trap
See 0650

CLAWSON, A. R.
Process for Making a Heterojunction Source-Drain Insulated Gate Field-Effect Transistors Utilizing Diffusion to Form the Lattice
See 0724

CLAXTON, R. L.
Prefabricated Panels for Rapidly Runway Repair and Expedient Airfield Surfacing
See 0784

CLAYTON, S. R.
Electrooptical Matrix Multiplication Using the Twos Complement Arithmetic for Improved Accuracy
See 1040

CLIFFORD, S. F.
Acoustic Scintillation Liquid Flow Measurement
See 0492

CLOSE, D. A.
Apparatus and Method for Identification of Matrix Materials in Which Transuranic Elements Are Embedded Using Thermal Neutron Capture gamma-Ray Emission
See 0026

COBURN, M. D.
Ethylenediamine Salt of 5-Nitrotetrazole and Preparation
See 0054

COFER, W. R.
Nebulization Reflux Concentrator
See 0033

COHEN, J. S.
Use of Paramagnetic Metalloporphyrins as Contrast Agents for Tumors in NMR Imaging
See 0881

COLCHER, D.
Monoclonal Antibodies Reactive with Human Breast Cancer
See 0927
Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
See 0938

COLE, E. O.
Optical System for Measuring Shadowgraph Data
See 0179

COLE, E. R.
Production of Lead from Sulfides
See 0961

COLE, J. H.
Optical Fibers with Reduced Pressure Sensitivity to High Frequency Acoustic Field
See 1062

COLEMAN, A. D.
Insulation Bonding Test System
See 0565

COLEMAN, H. P.
Dual Sense, Circularly Polarized Helical Antenna
See 0223

COLES, R. I.
Improved Ship Deck Lifeline
See 0732

COLLINS, E. R.
Improved Silicon Grinding Method and Apparatus
See 0706
Shuttle Car Loading System
See 0965

COLLINS, K. D.
Deep Ocean Wide Band Acoustic Baffle
See 0162

COLLINS, V. G.

COLLINS, V. G.
Nebulization Reflux Concentrator
See 0033

COLVIN, R. D.
SAW Oscillator with Digital Compensation for the Temperature Related Frequency Changes
See 0286

COMER, M. R.
Reduction of Signal Modulation Caused by Polarization in Visible Optical Scanning Systems
See 0180

CONNELLY, D. L.
Light Transmitting Window Assembly
See 1051

CONNICK, W. J.
Preparation of Pellets Containing Fungi and Nutrient for Control of Soilborne Plant Pathogens
See 0935

CONNON, T. R.
Direct View Helmet Mounted Telescope
See 0168

CONROY, B. L.
Method for Ultrasonic Bonding to Soft Microelectronic Substrates
See 0715

COOK, R. J.
Method for Screening Bacteria and Application Thereof for Field Control of Pythium spp. on Small Grain Crops
See 0013

COOKSON, A. H.
Particle Trap for Compressed Gas Insulated Transmission Systems
See 0379

COOPER, J. A.
Electronic Logic for Enhanced Switch Reliability
See 0251

COOPER, J. C.
Rusty Bolt Intermodulation Interference Reducer
See 0816

COSTA, T.
Dimeric Enkephalins
See 0887

COUCH, L. M.
Heat Pipe Cooled Probe
See 0549

COUEY, H. M.
Quarantine System for Papaya
See 0943

COULTRIP, R. H.
Hot Melt Adhesive Attachment Pad
See 0745

COWEN, S. J.
Method of Making an Undersea, High Pressure Bulkhead Penetrator for Use with Fiber Optic Cables
See 0734

COYLE, R. T.
Production of Silver Metallization by the Decomposition of Silver Compounds
See 0768

CRABTREE, D. J.
Rubber Modified Epoxy Adhesive
See 0750

CRAMER, P. W.
Beam Forming Network
See 0218

CRANFORD, H. B.
Portable Reclining Examination Chair
See 0873

CREED, D. L.
Method and Means for Providing Frequency Agile Operation of MTI (Moving Target Indicator) Radar
See 0201

CREMERS, D. A.
Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
See 0495

CRIST, S. D.
Rain Rate Meter
See 0614

CROSBIE, R. J.
Servo Operated Anti-G Suit Pressurization System
See 0876

CROSS, D. C.
Low Sidelobe, High Efficiency Mirror Antenna with Twist Reflector
See 0229

CROSSMAN, A. A.
New Free Electron Laser Using a Relativistic Beam with Spiralling Electron
See 1013

CROUCH, R. K.
Reusable Thermal Cycling Clamp
See 0156

CRUZAN, C. T.
Method for Ultrasonic Bonding to Soft Microelectronic Substrates
See 0715

CUMMINGS, R. J.
Windblast Arm Protector Assembly
See 1121

CUNNIFF, K. F.
Method for the Fabrication of Dielectric Isolated Junction Field Effect Transistor and PNP Transistor
See 0714

CUNNINGHAM, J. C.
Multi-Row Connector with Ground Plane Board
See 0311

CUNNINGHAM, R. E.
Variable Force, Eddy-Current or Magnetic Damper
See 0690

CURREN, A. N.
Textured Carbon Surfaces on Copper
See 0770

CURRIE, J. R.
Angular Measurement System
See 0494

CUTBURTH, R. W.
Three-Point Spherical Mirror Mount
See 1023

CUTHBERTSON, R. A.
Improvements in Linked-Spar Motion-Compensated Lifting System
See 0733

CUTTITTA, F. F.
Human SCLC (Small Cell Lung Cancer) Autocrine Growth Factors and Monoclonal Antibody Blocking the Same
See 0909

CZANDERNA, A. W.
Method of Bonding Silver to Glass and Mirrors Produced According to This Method
See 0717

DABNEY, R. W.
Power Control for AC Motor
See 0312

DAEMER, R. J.
Isolation of Hepatitis A Virus Strain HM-175
See 0920

DALE, J. E.
Rope Wick Applicator
See 0022

DALE, J. R.
Sonobuoy Float Inflation and Depth Selection Initiators
See 0737

DALY, J. W.
Biologically-Active Xanthine Derivatives
See 0045

Functionalized Congeners of Adenosine Recept Agonists
See 0907

Medical Applications of Functionalized Congene of Adenosine Receptor Drugs
See 0056

DAME, J. B.
Immunologically Active Peptides Capable of Indu ing Immunization against Malaria and Genes E coding Therefor
See 0912

Intact Gene and Method of Excising and Clonin Same
See 0915

DANDRIDGE, A.
Technique for the Reduction of Fading in Interfer meters
See 1071

DANFORTH, P. G.
Test Device for Expendable Bathythermograph S (XBT)
See 0638

DAPKUS, D.
W-Shaped Diffused Stripe GaAs/AlGaAs (Galliu Arsenide/Aluminium Gallium Arsenide) Laser
See 1027

DAPRATO, P. L.
Fluidized Bed Gasification of Extracted Coal
See 0388

DAS, M. B.
Modulation Doped GaAs/AlGaAs Field Effe Transistor
See 0345

DAUD, T.
Low Defect, High Purity Crystalline Layers Grow by Selective Deposition
See 1088

Method for Growing Low Defect, High Purity Cry talline Layers
See 1089

New Solar Cell Design for Improved Open Circ Voltage and High Efficiency
See 0434

DAUGHTRY, J. H.
Method of Making an Undersea, High Pressu Bulkhead Penetrator for Use with Fiber Op Cables
See 0734

DAVANLOO, P.
Cloning and Expression of the Gene for Bacter phage T7 RNA Polymerase
See 0901

DAVARI, B.
Selective Anodic Oxidation of Semiconductors Pattern Generation
See 0351

DAVARIAN, F.
Tone Calibrated Digital Radio Communicati System
See 0115

DAVEY, J. E.
Self-Aligned GaAs FET with Low 1/f Noise
See 0352

DAVIS, G. T.
Polyethylene Imine-Metal Salt Solid Electrolyte
See 0474

DAVIS, P. A.
Oscillating Pressure Device for Dynamic Calib tion of Pressure Transducers
See 0605

DAVIS, R. C.
Curved Cap Corrugated Sheet
See 1102

Daze Fasteners
See 0140

DAVIS, S. J.
Halogen Mass Flow Rate Detection System
See 1001
Optically Pumped Iodine Monofluoride Laser
See 1014

DAVIS, T. J.
Ferromagnetic Resonance Probe Liftoff Suppression Apparatus
See 0538

DAVIS, W. T.
Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers
See 0605
System for Controlling the Oxygen Content of a Gas Produced by Combustion
See 0634

DAWSON, L. R.
Field-Effect Transistor Having a Superlattice Channel and High Carrier Velocities at High Applied Fields
See 0339

DAWSON, S. R.
Multiconductor Flat Cable
See 0375

DAY, R. M.
Portable Pallet Weighing Apparatus
See 0609

DEBANY, W. H.
Transceiver Test Device
See 0644

DEBNAM, W. J.
Reusable Thermal Cycling Clamp
See 0156

DECKER, J. M.
Purification of Uromodulin
See 0893

DEGNAN, T. F.
Shale Oil Dearsenation Process
See 0399

DEKANICH, S. J.
Method for Uniformly Bending Conduits
See 0716

DELOACH, J. R.
Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

DEMARCO, R. A.
Preparation of Simple Nitronium Salts
See 0075

DENEF, D. E.
Television Camera Video Level Control System
See 0113

DENTE, G. C.
Unstable Optical Resonator with Cancelling Edge Waves
See 1079

DE REGGI, A. S.
Transducer Hydrophone with Filled Reservoir
See 0645

DEVANEY, H. F.
Multiple-Stage Integrating Accelerometer
See 0598

DEWITT, L. C.
Generation and Display Apparatus
See 0126

DEXTER, F. A.
Phanton Computer Gating System
See 0971

DEYOUNG, A.
Projection Lens Scanning Laser Velocimeter System
See 0612

DICKERSON, W. A.
Boll Weevil Trap
See 0900

DIEBOLD, J. P.
Fluidizing Device for Solid Particulates
See 0666

DIENER, T. O.
Sensitive and Rapid Diagnosis of Viroid Diseases and Viruses
See 0946

DIMARIA, D. J.
Two Carrier Dual Injector Apparatus
See 0354

DINSMORE, S. R.
Disc Valve for Sampling Erosive Process Streams
See 0521

DIRUSSO, E.
Variable Friction Secondary Seal for Face Seals
See 0754

DIVERS, E. F.
Extensible Brattice Support System for Mine Face Ventilation
See 0954

DIXON, R. H.
Device for Cryogenically Fabricating Source Material for Plasma X-ray Lasers
See 0995

DIXON, S.
Monolithic Planar Doped Barrier Limiter
See 0346

DOANE, W. M.
Modified Starches as Extenders for Absorbent Polymers
See 0016

DOBBS, H. H.
Sealing Assembly
See 0751

DOEBLER, H. J.
Tactical Expendable Device
See 0166

DOLAN, J. E.
Rim-Drive Cable-Aligned Heliostat Collector System
See 0437

DOLBEARE, R. T.
Vibration Isolated Cold Plate Assembly
See 0694

DOLL, D. W.
Remote Controlled Vacuum Joint Closure Mechanism
See 0155

DOLLAND, C. R.
High or Low-Side Solid State Relay with Current Limiting and Operational Testing
See 0259

DONAHUE, R. J.
CCD (Charge-Coupled Device) Gaussian Convolution Method
See 0359

DONNERMEYER, D.
Vibration Dosimeter
See 0882

DOUGHTY, C. A.
Thermal Well-Test Method
See 0482

DOW, R. L.
Nozzle for Self-Contained Cutting Torches
See 0676

DRAGONETTE, L. R.
Calibration Method for Acoustic Scattering Measurements Using a Spherical Target
See 0506

DRINKWATER, E. H.
Ground Slot Waveguide Laser
See 1000
Multiple Parallel RF Excited CO2 Lasers
See 1012

DRISCOLL, M. M.
Low Noise Multiple Crystal-Controlled Oscillator
See 0267

DRULLINGER, R. E.
Heat Pipe Oven Molecular Beam Source
See 0550

DUCATI, A. C.
Heat Resistant Sheathed Insulated Electrical Conductors
See 0366

DUFAU, M. L.
Rapid Bioassay and a Kit for Peptide Hormones
See 0944

DUGGAN, S.
Drill Guide for Bone Plate Fixation
See 0853

DUNN, J. C.
Convective Heat Flow Probe
See 0453

DUNN, P. F.
Apparatus for Sampling and Characterizing Aerosols
See 0501

DUNNING, J. S.
Ductile Duplex Iron-Based Alloy Containing Aluminum
See 0801

EBIHARA, B. T.
Apparatus for Mounting a Field Emission Cathode
See 0318
Multistage Spent Particle Collector and a Method for Making Same
See 0674

EBY, R. S.
UF Sub 6 -Recovery Process Utilizing Desublimation
See 0039

ECKELMAN, W. C.
Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

EDELMAN, S.
Piezoelectric Polymer Heat Exchanger
See 0422

EDEN, J. G.
Infrared Optical Measurement of Blood Gas Concentrations and Fiber Optic Catheter
See 0862
Photoionization Technique for Growth of Metallic Films
See 0719
Visible and Ultraviolet Lasers Based on Excimer Transitions in the Homonuclear Halogens
See 1026

EDLIN, G. R.
Automated Calibration Technique for Non-Field Perturbing (Electrically Small) Electromagnetic Field Sensors
See 0503

EDWARDS, P. R.
Servo Operated Anti-G Suit Pressurization System
See 0876

EDWARDS, T. R.
Method of and Apparatus for Generating an Interstitial Point in a Data Stream Having an Even Number of Data Points
See 0130

EHL, J. H.

EHL, J. H.
Alignment and Assembly Tool for Very Large Diameter Cylinders
See 0654

ELDER, M. G.
Thermal Protection Apparatus
See 0481

ELDRIDGE, A. C.
Production of Defatted Soybean Products by Supercritical Fluid Extraction
See 0018

ELKIN, B. R.
Double Window Viewing Chamber Assembly
See 0522

ELLEMAN, D. D.
Closed Loop Electrostatic Levitation System
See 0304

ELLER, P. G.
Method for Recovery of Actinides from Actinide-Bearing Scrap and Waste Nuclear Material Using O sub 2 F sub 2
See 0032

ELLINGSWORTH, J. R.
Tensile Testing Apparatus
See 0637

ELTON, R. C.
Device for Cryogenically Fabricating Source Material for Plasma X-ray Lasers
See 0995

EMERY, K. A.
Method and Apparatus for Measuring Areas of Photoelectric Cells and Photoelectric Cell Performance Parameters
See 0579

ENGLAR, D. G.
Sampling Device
See 0875

EOFF, J. M.
Non-Bonded Ultrasonic Transducer
See 0599

ERLICH, J. N.
Light-Weight Oxygen Delivery Hood Assembly for Hyperbaric Chamber
See 0864

ERNEST, J. H.
Wireless Remote Liquid Level Detector and Indicator for Well Testing
See 0967

ERSTFELD, T. E.
Method for the Preparation of Epitaxial Films of Mercury Cadmium Telluride
See 0175

Process for the Epitaxial Deposition of III-V Compounds Utilizing a Binary Alloy as the Metallic Source
See 1095

Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch
See 0035

ESCALLIER, E. A.
Multiconductor Flat Cable
See 0375

ESPOSITO, J. J.
Low Temperature Inflator Apparatus
See 0485

ETHRIDGE, E. C.
Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662

EVANS, D. M.
Wireless Remote Liquid Level Detector and Indicator for Well Testing
See 0967

EVANS, L. G.
Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
See 0578

EVANS, W. P.
Harmonic Distortion Reduction Technique for Data Acquisition
See 0127

EVERETT, S.
Multi-Track Optical Shaft Position and Timing Cylinder
See 0979

EVERETT, S. L.
Control for Dot Matrix Printers Operating in Harsh Environment
See 0122

Dot Matrix Color Printer
See 0977

Dual Optical Mechanical Position Tracker
See 0097

Optically Controlled Multi-Color Impact Printer
See 0981

EVERSOLE, J. D.
Multi-Color X-Ray Line Source
See 1059

EXTON, R. J.
Vibration-Free Raman Doppler Velocimeter
See 0651

EYLON, D.
Method for Refining Microstructures of Cast Titanium Articles
See 0809

FACKLAM, R. L.
Active Dispersion Control for a Doppler Broadened Laser
See 0988

Laser Clock
See 0566

FADEN, A. I.
Narcotic Antagonists in the Therapy of Shock
See 0891

FALLON, P.
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036

FANTA, G. F.
Modified Starches as Extenders for Absorbent Polymers
See 0016

FARMER, D. M.
Acoustic Scintillation Liquid Flow Measurement
See 0492

FARMER, M. G.
Model Mount System for Testing Flutter
See 0592

FARMWALD, P. M.
Improvements in Floating Point Addition/Subtraction Operations
See 0128

FARRINGTON, H. O.
Sump Arrangement for Snorkel Intake
See 0738

FARRINGTON, R. B.
Solar System Fault Detection
See 0425

FASCHING, G. E.
Wireless Remote Liquid Level Detector and Indicator for Well Testing
See 0967

FASSEL, V. A.
Concentric Micro-Nebulizer for Direct Sample Insertion
See 0513

FAWWAZ, R. A.
Indium-111 Labeled Anti-Melanoma Monoclonal Antibodies
See 0914

Palladium-109 Labeled Anti-Melanoma Monoclonal Antibodies
See 0934

FEINSTONE, S. M.
Isolation of Hepatitis A Virus Strain HM-175
See 0920

FELDMAN, N. W.
Single Optical Fiber Telephone System
See 0110

FELDMESSER, J.
Soil Sampling Apparatus
See 0628

FERRANDO, W. A.
Suspension Method of Impregnating Active Material into Composite Nickel Plaque
See 0787

FERRANTE, J. V.
Variable Data Base Generator Apparatus
See 0136

FERRARI, J. M.
High Switching Speed Electrically Tuned Microwave Magnetic Resonance Devices
See 0261

FERRONE, S.
Indium-111 Labeled Anti-Melanoma Monoclonal Antibodies
See 0914

Palladium-109 Labeled Anti-Melanoma Monoclonal Antibodies
See 0934

F'GEPPERT, E.
Compact Brake Structure
See 0660

Torque Sensor
See 0642

FILLER, R. L.
Acceleration Sensitivity Reduction Method
See 0316

Acceleration-Resistant Crystal Resonator
See 0317

FINDL, E.
Fuel Cell Having Dual Electrode Anode or Cathode
See 0460

FINFINGER, G. L.
Method of Enhancing the Removal of Methane Gas and Associated Fluids from Mine Boreholes
See 0959

FINKE, R.
Piezoelectric Deicing Device
See 1112

FINKELMAN, F. D.
Enhancement of Specific Antibody Production with Anti-IgD Antibodies
See 0904

FIORITO, R.
Coaxial Probe for Measuring the Current Density Profile of Intense Electron Beams
See 0512

FITZGERALD, D. J.
Pseudomonas Exotoxin Conjugate Immunotoxins
See 0941

FLANAGAN, J. E.
Azido Nitramino Ether Containing Solid Propellant
See 0042

Azido Nitramino Ethers
See 0043

FLEMMING, E.
High Voltage Disconnect Protection
See 0310

FLOOD, W. S.
Broad-Band Beam Buncher
See 0358

FLOYD, R. E.
Magnetostatic Wave Frequency Analyzer Apparatus
See 0575

FODOR, G.
Rod-to-Rod Spacing Illuminating Device
See 0424

FOHLEN, G. M.
Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828
Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057
Phosphorus-Containing Imide Resins
See 0067
Phthalocyanine Polymers
See 0068

FONSTAD, C. G.
Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
See 1085

FORD, J. L.
Device for Cryogenically Fabricating Source Material for Plasma X-ray Lasers
See 0995

FORESTER, D. W.
Alloys and Method of Making
See 0796
Solid State Hydrogen Pumping and Storage Material,
See 0400

FORMAN, R.
Apparatus for Mounting a Field Emission Cathode
See 0318

FORTER, S. A.
Polaris Guidance System
See 0973

FOSS, D. R.
One-Step Loading Adapter
See 0677

FOSTER, C.
Drill Guide for Bone Plate Fixation
See 0853

FOSTER, R. M.
Multiple Rate Shock Isolator Damping Valve
See 0486

FOWLER, O. V.
Releasable Cable Connector Assembly for Use between a Mobile and Stationary Object
See 0154

FOX, J. B.
Method of Making Stable Emulsified Meat Products
See 0014

FOX, R. L.
Hot Melt Adhesive Attachment Pad
See 0745
Induction Heating Gun
See 0414

FRAIOLI, A. V.
Composite Desiccant Structure
See 0774

FRANK, A. H.
Passive Maser Using Timesharing for Control of the Cavity and Control of the Oscillator on the Line of Stimulated Emission
See 1016

FRANK, D.
High Voltage Disconnect Protection
See 0310

FRANK, G. H.
Protection Circuitry for High Voltage Drivers
See 0280

FRANK, L. J.
Calibration Method for Acoustic Scattering Measurements Using a Spherical Target
See 0506

FRANKS, L. A.
Apparatus and Method for Identification of Matrix Materials in Which Transuranic Elements Are Embedded Using Thermal Neutron Capture gamma-Ray Emission
See 0026

FRASCH, C.
Vaccine Against Neisseria Meningitidis Group B Serotype 2 Invasive Disease
See 0951

FREDD, E. H.
Television Camera Video Level Control System
See 0113

FREDERICK, R.
Improved Temperature Detection System for Use on Film Cooled Turbine Airfoils
See 0562

FREDHOLM, B. B.
Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056

FREEDMAN, L. A.
Television Camera Video Level Control System
See 0113

FRENCH, D. M.
Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

FRIEDMAN, H. A.
Separation of Uranium from Technetium in Recovery of Spent Nuclear Fuel
See 0037

FRIEDMAN, L.
Method of Precisely Modifying Predetermined Surface Layers of a Workpiece by Cluster Ion Impact Therewith
See 0810

FRIEDMAN, M.
IREB (Intense Relativistic Electron Beam) Converter to AC Pulses
See 0465

FRIEDRICH, J. P.
Production of Defatted Soybean Products by Supercritical Fluid Extraction
See 0018
Production of Food-Grade Corn Germ Product by Supercritical Fluid Extraction
See 0019

FRIGO, N. J.
Technique for the Reduction of Fading in Interferometers
See 1071

FRIPP, A. L.
Reusable Thermal Cycling Clamp
See 0156

FRITZ, I. J.
Field-Effect Transistor Having a Superlattice Channel and High Carrier Velocities at High Applied Fields
See 0339

FRIZZILL, A. W.
Hot Melt Adhesive Attachment Pad
See 0745

FROES, F. H.
Method for Refining Microstructures of Cast Titanium Articles
See 0809
Titanium Metal-Matrix Composites
See 0788

FROST, C. B.
Rigid Zeolite Containing Polyurethane Foams
See 0835

FROST, C. M.
Temperature Adaptable Textile Fibers and Method of Preparing Same
See 0795

FRYLING, C. A.
Substantially Purified Tumor Growth Inhibitory Factor (TIF)
See 0895

FUCHS, A.
Transmissive Dewar Cooling Chamber for Optically Pumped Semiconductor Ring Lasers
See 1024

FUKUSHIMA, E.
Apparatus for Unilateral Generation of a Homogeneous Magnetic Field
See 0319

GAAL, P. S.
Rod-to-Rod Spacing Illuminating Device
See 0424

GABRIEL, N. J. S.
Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
See 1085

GAHN, R. F.
Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470

GALEN, T. J.
Solid Sorbent Air Sampler
See 0629

GALLAGHER, B. D.
Increased Voltage Photovoltaic Cell
See 0432
Process to Produce Fine Line Metallic Collection Patterns on Semiconductors Devices
See 0815

GALLIHER, K. R.
Test Device for Expendable Bathythermograph Set (XBT)
See 0638

GALLO, R. C.
Competitive ELISA (Enzyme-Linked Immunosorbent Assay) for the Detection of Antibodies
See 0902

GAMBLE, H. R.
Diagnostic Reagent for Swine Trichinosis
See 0005

GANT, L. A.
Tire Inflation/Deflation System
See 0490

GARCIA, F.
Self-Actuating Vacuum Gas/Liquid Separator
See 0963

GARNER, H. D.
Volumetric Fuel Quantity Gauge
See 0652

GARRETT, R. A.
Integrated Wheelchair and Ambulator
See 0863

GAVRIELIDES, A.
Bandpass Filter Formed by Serial Gratings Operating in a Wood's Anomaly Region
See 1030

GAY, D. D.
Sub-Micron Particle Sampler Apparatus and Method for Sampling sub-Micron Particles
See 0632

GAZZERA, R. W.

GAZZERA, R. W.
Pneumatic Actuator Device
See 0487

GEARY, J. M.
Method and Apparatus for High Speed, Sustained Recording of Infrared Laser Beam Patterns
See 1010
Method of Measuring Spherical Aberration and Apparatus Therefor
See 1057
Turbulence Measurement Interferometer Apparatus
See 0646

GEASEY, L. T.
Portable Reclining Examination Chair
See 0873

GEDWILL, M. A.
Overlay Metallic-Cermet Alloy Coating Systems
See 0763

GEGEL, H. L.
Optimizing Hot Workability and Controlling Microstructures in Difficult to Process High Strength and High Temperature Materials
See 0812

GELBWACHS, J. A.
Multiple Site Laser Excited Pollution Monitoring System
See 0597

GELLER, M.
Atmospheric Transmissometer
See 0502
Optical Non-Line-of-Sight Covert, Secure High Data Communication System
See 0105

GENNETTEN, E. W.
Digital Raster Timing Encoder/Decoder
See 0095

GENTRY, J. F.
Multiplexed Data Stream Monitor
See 0131

GEOSLING, C. E.
High Temperature Ultra-High Vacuum Infrared Window Seal
See 1005

GERBER, H. E.
Apparatus for Determining the Liquid Water Content of a Gas
See 0497

GIALLORENZI, T. G.
External Cavity Diode Laser Sensor
See 0534

GIBLER, D. L.
Integrated Paratroop Door
See 1108

GILBERT, M.
Lithium Aluminum/Iron Sulfide Battery Having Lithium Aluminum and Silicon as Negative Electrode
See 0466

GILES, C. L.
Spatial Frequency Multiplexed Coherent Optical Processor for Calculating Generalized Moments
See 1067

GILMAN, S.
Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451
Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

GILMORE, R. F.
Portable Cutting Apparatus
See 0678

GILSON, A. P.
Optical Disc Transport System
See 0980

GINLEY, D. S.
Conductor-Polymer Composite Electrode Materials
See 0775

GIORDANO, S.
Monochromatic Radio Frequency Accelerating Cavity
See 0334

GIPPA, M.
Machine with an Intermittently Rotating Table for the Performance of Work Operations
See 0671

GIROD, G. F.
Device and Method for Measuring the Energy Content of Hot and Humid Air Streams
See 0518

GISLER, G. L.
Emitted Vibration Measurement Device and Method
See 0533

GIULIANI, J. F.
Method for Bonding Insulator to Insulator
See 0747
Optical Waveguide Sensor for Methane Gas
See 0603
Optical 3-D Signature Device for Detecting Chemical Agents
See 0604
Reversible Optical Waveguide Vapor Sensor
See 0620

GLASGOW, D. G.
Process for Preparation of Crosslinked Poly(tri-n-butyltin) Methacrylate with Simultaneous Particle Size Reduction
See 0076

GLASGOW, T. K.
Overlay Metallic-Cermet Alloy Coating Systems
See 0763

GLASS, R. E.
Opacity Control Technique for Jet Engine Test Cells
See 0602

GOETZ, A. F. H.
Portable Reflectance Spectrometer
See 0610

GOLDBERG, D. A.
Broad-Band Beam Buncher
See 0358

GOLDBERG, L.
Controlled-Linewidth Laser Source
See 0992
Optical Injection Locking of Solid-State Oscillators by Frequency-Multiplexed Injection-Locked, Laser Diodes
See 0377

GOLDBERG, L. S.
Picosecond Broadband CARS (Coherent Antistokes Raman Spectroscopy) Probe Using the Picosecond Continuum
See 0608

GOLDHAR, J.
Transparent Electrode for Optical Switch
See 1076

GOLDIE, H.
RF-Primed High Power Halogen Vial Apparatus
See 0213

GOLDMAN, D.
Method for Simultaneously Monitoring Turnover Rate in Multiple Proteins
See 0926

GOLDOWSKIY, M. P.
Linear Magnetic Bearings
See 0670

GOLDSTEIN, D.
Padlock Shackle
See 0152

GOLT, C. A.
Loop Radiating Elements
See 0228

GOMES, J. M.
Formation of Tungsten Monocarbide from a Molten Tungstate-Halide Phase by Gas Sparging
See 0840

GOMEZ, D. A.
Digital Raster Timing Encoder/Decoder
See 0095

GONZALEZ, A.
2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
See 0896

GONZALEZ-SANABRIA, O. D.
Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446

GOODWIN, E. L.
Metallographic Preparation of Particulate Filled Aluminum Metal Matrix Composite Material
See 0783

GORALNICK, N. S.
Mirror Actuator Control System
See 0176

GORDON, F. E.
Current Stabilized Underwater Platform
See 0728

GOSS, W. C.
Optical Fiber Coupling Method and Apparatus
See 1061
Ranging System Which Compares an Object Reflected Component of a Light Beam to a Reference Component of the Light Beam
See 0616

GOUKER, T. R.
Fluidized Bed Gasification of Extracted Coal
See 0388

GRAFF, H.
Electro-Optical Target Detection
See 0171

GRAHAM, R. A.
Portable Reflectance Spectrometer
See 0610

GRAKAUSKAS, V.
Synthesis of Geminal Dinitro Compounds
See 0085

GRANA, D. C.
Flow Through Bacteria Detection System
See 0856

GRANT, P. A.
Imaging X-Ray Spectrometer
See 0556

GRANT, S. D.
2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
See 0896

GRANT, W. B.
Portable Remote Laser Sensor for Methane Leak Detection
See 0611

GRASSO, A. P.
Liquid Level Detector
See 0571
Reactant Pressure Differential Control for Fuel Cell Gases
See 0475

GRAY, H. F.
P-N Junction Controlled Field Emitter Array Cathode
See 0378

GRAY, R. P.
Method for Tuning a Phased Array Antenna
See 0231

GREEN, A. H.
Electronically Controlled Array for Simulation of Passive Target/Background Signatures at Millimeter Wavelengths
See 0193

GREEN, P. A.
Dielectric Resonator Stabilized Microstrip Oscillator
See 0247

GREEN, W. J.
Injection Controlled Laser Transmitter with Twin Local Oscillators
See 0173

GREENE, E. E.
Laminated Thermoplastic Radome
See 0197

GREENE, J. P.
Vacuum Ultraviolet Laser
See 1025

GREENE, R. F.
Heterojunction Schottky Gate Mesfet with Lower Channel Ridge Barrier
See 0340
P-N Junction Controlled Field Emitter Array Cathode
See 0378

GREENWOOD, T. D.
Thermoset-Thermoplastic Aromatic Polyamide Containing n-Propargyl Groups
See 0838

GREGOR, H.
Membrane Processes for Separation of Organic Acids from Kraft Black Liquors
See 0841

GRIEST, N. J.
Improved Ship Deck Lifeline
See 0732

GRIFFIN, T. S.
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889

GRIFFITH, J. R.
Fluorinated Diacrylic Esters
See 0744

GROFFEN, J.
Deoxyribonucleic Acid Molecules Useful as Probes for Detecting Deleterious Genes Incorporated into Chromosomal DNA
See 0903

GRONE, D. J.
Maintenance Port System
See 0129

GROSSMAN, R. J.
High Resolution In situ Ultrasonic Corrosion Monitor
See 0553

GRUBER, R. P.
Simplified DC to DC Converter
See 0289

GRUEN, D. M.
Excimer Laser Phototherapy for the Dissolution of Vascular Obstruction
See 0906

GRUENER, M.
Positioning of a Multicolor Ribbon
See 0984

GUARNIERI, J. J.
Spring Loaded Thermocouple Module
See 0630

GUELDNER, R. C.
Control of Mycotoxin Production by Chemically Inhibiting Fungal Growth
See 0004

GUENZER, C. S.
Polarimetric Image Recorder
See 0983

GUHSE, R. A.
Test Signal Generator for Coherent Air-to-Ground Radars
See 0216

GUNDERSON, D. E.
Method and Apparatus for Measuring Press Roll Clearance
See 0581

GUNTER, W. D.
Projection Lens Scanning Laser Velocimeter System
See 0612

GUSS, P. L.
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

GUST, I. D.
Isolation of Hepatitis A Virus Strain HM-175
See 0920

HAAS, G. A.
Atomically Mixed Alloy Coated Cathodes Specification
See 0356
Method for Predicting the Performance of Cathode Materials
See 0329

HAAS, R. A.
Electro-Optic Harmonic Conversion to Switch a Laser Beam Out of a Cavity
See 1038

HAGEDORN, N. H.
Negative Electrode Catalyst for the Iron-Chromium Redox Energy Storage System
See 0470

HAGER, E. R.
Remote Controlled Vacuum Joint Closure Mechanism
See 0155

HAGGENMILLER, C.
Wet Film Applicator
See 0696

HALE, B. D.
Electrolytic Cell
See 0531

HALL, E. C.
Polaris Guidance System
See 0973

HALL, I. H.
Pharmacologically Active Amine Boranes
See 0065

HALLAM, K. L.
Wide-Angle Flat Field Telescope
See 1080

HAMILTON, T. H.
UF Sub 6 -Recovery Process Utilizing Desublimation
See 0039

HAMPAR, B.
Enzyme-Linked Immunosorbent Assay (ELISA) for Determining Anti-Bodies against Herpes Simplex Virus (HSV) Types 1 and 2 in Human Sera
See 0905

HAND, P. H.
Monoclonal Antibodies Reactive with Human Breast Cancer
See 0927
Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
See 0938

HANKO, L.
Halogen Mass Flow Rate Detection System
See 1001
Optically Pumped Iodine Monofluoride Laser
See 1014

HANNAN, P. J.
Method and Apparatus for the Detection of Toxicants
See 0584

HANNAN, P. W.
Integrated Defense Communications System Anti-jamming Antenna System
See 0226

HANSEN, G. R.
Phase Sensitive Guidance Sensor for Wire-Following Vehicles
See 0972

HANSEN, J. P.
Adaptive MTI (Moving Target Indicator) System
See 0186
Coherent Receiver Phase and Amplitude Alignment Circuit
See 0093

HAQUE, D. O.
Extracting Digital Data from a Bus and Multiplexing It with a Video Signal
See 0978

HARA, H.
Improved Operation of Transversely Exited N2O Lasers
See 1006

HARAST, D. G.
Improved Brazing Technique
See 0705

HARDEE, H. C.
Convective Heat Flow Probe
See 0453

HARPER, R. J.
Process to Impart Smooth-Dry and Flame Retardant Properties to Synthetic-Cellulosic Blended Fabrics
See 0792

HARRAH, L. A.
Polysilane Positive Photoresist Materials and Methods for Their Use
See 0830

HARRIS, G. R.
Transducer Hydrophone with Filled Reservoir
See 0645

HARRIS, J. H.
Optoelectronic Integrated Circuit Multiplier
See 1066

HARRIS, R. L.
Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

HARRISON, C. P.
Granulation of Urea Phosphate from Urea and Merchant-Grade Phosphoric Acid
See 0007

HARRISON, D. R.
LDV(Lase Doppler Velocimeter) Multiplexer Interface
See 0100

HARTLEY, J. R.

HARTLEY, J. R.
Deep Submergence Vehicle (DSV) Lightweight Cable Cutter,
See 0729

HARVEY, R. A.
Heater Block Assembly for Use in Thermal Oxidation Testing of Jet Fuel
See 0551

HASLIM, L. A.
Electro-Expulsive Separation System
See 1103

HASSLER, J. M.
Remote Pivot Decoupler Pylon: Wing/Store Suppression
See 1113

HAUGWITZ, R.
New Antineoplastic Platinum (IV) Complexes
See 0063

HAUN, M. J.
Transversely Reinforced Piezoelectric Composites
See 0789

HAUPT, R. L.
Phase only Adaptive Nulling in a Monopulse Antenna
See 0204
Reducing Grating Lobes Due to Subarray Amplitude Tapering
See 0234

HAWKINS, G. F.
Method and Apparatus for Detecting Acoustic Emissions from Metal Matrix Wire
See 0577

HAWRYLO, F. Z.
Diffusion Barrier for Long Wavelength Laser Diodes
See 0997
LPE (Liquid Phase Epitaxy) Semiconductor Material Transfer Method
See 0710
Multiple Double Heterojunction Buried Laser Device
See 1011
Simultaneous Doped Layers for Semiconductor Devices
See 1022

HAYES, C. F.
Quarantine System for Papaya
See 0943

HEARST, P. J.
Passivation of Steel with Aqueous Amine Solutions
See 0813

HEATH, J. E.
Sensor System
See 0183

HEATH, J. S.
Printing Apparatus
See 0985

HEDRICK, D.
T-Cell Receptor-Specific for Antigen Polypeptides and Related Polynucleotides
See 0949

HEFFRON, M. A.
Variable Data Base Generator Apparatus
See 0136

HEFNER, J. N.
Combined Riblet and Lebu Drag Reduction System
See 0727

HEIBERGER, J. J.
Method and System for Producing Lower Alcohols
See 0392

HEILAND, W. K.
Automatic Hide Processing Apparatus
See 0657
Shielded Sniffing Device
See 0625

HEIMBUCH, A. H.
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

HEIN, L. A.
Tube Coupling Device
See 0159

HEIPLE, C. R.
Control of Gas Tungsten Arc Welding Pool Shape by Trace Element Addition to the Weld Pool
See 0700

HEISTERKAMP, N.
Deoxyribonucleic Acid Molecules Useful as Probes for Detecting Deleterious Genes Incorporated into Chromosomal DNA
See 0903

HELD, J. L.
Deep Ocean Wide Band Acoustic Baffle
See 0162
Deep Submergence Vehicle (DSV) Lightweight Cable Cutter,
See 0729

HELLER, C.
Adjustable Indicating Device for Load Position
See 0493

HELLING, C. S.
Soil Sampling Apparatus
See 0628

HELLSTROM, E. E.
Method for Preparing Pb- beta "-Alumina Ceramic
See 0843

HEMLER, P. F.
Hermetic Chip Carrier Compliant Soldering Pads
See 0258

HENDERSON, D. M.
Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
See 1047

HENDRISCHK, W.
Positioning of a Multicolor Ribbon
See 0984

HENESIAN, M. A.
Electro-Optic Harmonic Conversion to Switch a Laser Beam Out of a Cavity
See 1038
Transparent Electrode for Optical Switch
See 1076

HENSCHKE, R. W.
Optical Radar Transceiver Control Apparatus
See 0177

HERCEG, J. E.
Apparatus for Sampling and Characterizing Aerosols
See 0501

HERD, R. S.
Range-Only Multistatic Radar System
See 0212

HERGENROTHER, P. M.
Phenoxy Resins Containing Pendent Ethynyl Groups and Cured Resins Obtained Therefrom
See 0066

HERNANDEZ, G. J.
Twin-Etalon Scanning Spectrometer
See 1078

HESS, R. W.
Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers
See 0605

HEYMAN, J. S.
Double Reference Pulsed Phase Locked Loop (Drp-2L-2)
See 0096
Method for Thermal Monitoring Subcutaneous Tissue
See 0868

HIGGINS, C. H.
Data Acquisition Channel Apparatus
See 0245

HILBERT, C.
Radiofrequency Amplifier Based on a DC Superconducting Quantum Interference Device
See 0281

HILLS, R. A.
ECM Multiple-Target Retrodirective Antenna
See 0224

HINDS, F. T.
Over-Center Toggle Latch
See 0151

HINKLEY, E. D.
Portable Remote Laser Sensor for Methane Leak Detection
See 0611

HIRSCHFELD, T. B.
Nonsaturable Microdryer
See 0421

HISLOP, A. R.
Switching Mixer
See 0293

HITCHCOCK, P. J.
Monoclonal Antibodies Against Chlamydial Genus Specific Lipopolysaccharide
See 0890

HO, T. H.
Preparation of Polymers of Functionalized Acetylenes
See 0074

HOGG, D. C.
Phased Antenna Array for Wind Profiling Applications
See 0206

HOLADAY, J. W.
Narcotic Antagonists in the Therapy of Shock
See 0891

HOLCOMBE, C. E.
Electrically Conductive Containment Vessel for Molten Aluminum
See 0141
Non-Carbon Induction Furnace
See 0420

HOLLAND, G. G.
In-Situ Annular Face Grinder
See 0668

HOLLSTEIN, E. J.
Method for Removing Chlorine Compounds from Hydrocarbon Mixtures
See 0393

HONEYCUTT, T. E.
Pulsed Digital Multiplexed Laser Generator
See 1019

HONG, C. S.
W-Shaped Diffused Stripe GaAs/AlGaAs (Gallium Arsenide/Aluminium Gallium Arsenide) Laser
See 1027

HONIG, E. M.
Counterpulse Railgun Energy Recovery Circuit
See 0454
Overpulse Railgun Energy Recovery Circuit
See 0473
Reversing-Counterpulse Repetitive-Pulse Inductive Storage Circuit
See 0283
Series-Counterpulse Repetitive-Pulse Inductive Storage Circuit
See 0479

HONN, J. J.
Latch for Detachably Securing Electronic Cards Along Orthogonal Loading Axes
See 0147

HOOPS, E. A.
Method for Preparing Improved Quality Rice-Containing Baked Products
See 0011

HOPKINS, W. J.
Process and Compositions for Preserving Fresh Hides and Skins
See 0846

HOPWOOD, F. W.
Wide-Band Phase Locked Loop Amplifier Apparatus
See 0301

HORN, R. E.
Coaxial Cavity Gunn Oscillator Using Probe Coupled Microstrip
See 0240
Image Line Voltage Controlled Oscillator with Replaceable Components
See 0263
Integrated Dual Beam Line Scanning Antenna and Negative Resistance Diode Oscillator
See 0227

HORNER, J. L.
Holographic Directional Coupler for Fiber Optic Systems
See 1046

HORWITZ, E. P.
Method for Extracting Lanthanides and Actinides from Acid Solutions by Modification of Purex Solvent
See 0031

HOWARD, D. D.
Dual Band, Low Sidelobe, High Efficiency Mirror Antenna
See 0222
Low Sidelobe, High Efficiency Mirror Antenna with Twist Reflector
See 0229

HOWARD, F. S.
Method and Apparatus for Generating Monopulse Ultrasonic Signals
See 0270

HOWARD, W. E.
Method and Composition for Luring Coyotes
See 0923

HOWELL, B. J.
Wide-Angle Flat Field Telescope
See 1080

HOWELL, W. E.
Volumetric Fuel Quantity Gauge
See 0652

HSU, J. P.
High Power Laser Dump
See 1003

HSU, L. C.
Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446

HSU, M. S.
High Power Laser Dump
See 1003

HSU, M. T.
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779

HSU, M. T. S.
Light Weight Fire Resistant Graphite Composites
See 0781

HUANG, H. W.
Time Resolved Extended X-Ray Absorption Fine Structure Spectrometer
See 0641

HUANG, P. H.
Humidity Sensing and Measurement Employing Halogenated Organic Polymer Membranes
See 0555

HUANG, S. L.
Remote Optical Crack Sensing System
See 0617

HUBBELL, T. E.
Ion-Beam Nitriding of Steels
See 0707

HUDSON, N. H.
Apparatus and Circuits for Two-Color Printing in Electronic Impact Printers
See 0976

HUEBOTTER, P. R.
Fast Reactor Power Plant Design Having Heat Pipe Heat Exchanger
See 0458

HUFFMAN, L. H.
Hydraulic Mining Method
See 0955

HUFFORD, D. K.
Mask Aligner for Solar Cell Fabrication
See 0672

HUGHES, R. C.
Radiation-Hardened Polymeric Films
See 0834

HULSE, M. M.
Spectrophotometric Method for Simultaneously Analyzing Protein and Fat Contents in Milk
See 0024

HUMPHREY, D. E.
Modulated Voltage Metastable Ionization Detector
See 0593

HUNTER, J. S.
Device for Controlling Optical Fiber Twist on a Bobbin
See 1033

HUSBANDS, C. R.
Wavelength Selective Demultiplexer Tuner
See 0300

HUXSOL, R. D.
Printed Wiring Board Circuit Isolator Tool
See 0682

IACOVANGELO, C. D.
Electrolyte Reservoir for Carbonate Fuel Cells
See 0457

IANNACCHIONE, A. T.
Remote Sequential Gas Sampler for Blasting Areas
See 0618

IH, C. S.
Laser Generation of Ultrasonic Waveform Reconstructions
See 0567
Laser Generation of Ultrasonic Waveform Reconstructions
See 1049

IHLER, G. M.
Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

ISELER, G. W.
Telescoping Low Vibration Pulling Mechanism for Czochralski Crystal Growth
See 0688

ISHMAEL, J.
Cable Stripping Apparatus
See 0658

ITO, P. H.
Transient Test of Suspension Electronics for Gyroscope
See 0975

ITO, Y.
Multi-Layer Coil Assembly Coaxially Mounted Around the Rotary Axis for Preparatory Countercurrent Chromatography
See 0595
Multi-Layer Coil Countercurrent Chromatograph with Adjustable Revolutional Radius
See 0596

IWATA, K.
Substantially Purified Tumor Growth Inhibitory Factor (TIF)
See 0895

JABLONSKI, D. G.
High Output Programmable Signal Current Source for Low Output Impedance Applications
See 0260

JACKSON, J. W.
Imaging X-Ray Spectrometer
See 0556

JACKSON, L. R.
Curved Cap Corrugated Sheet
See 1102
Daze Fasteners
See 0140

JACOBI, N.
Acoustic Particle Separation
See 0030

JACOBS, H.
Filter Reflection Image Guide Oscillator and Solid State Line Scanning Device
See 0254
Integrated Circuit Tunable Cavity Oscillator
See 0264
Integrated Dual Beam Line Scanning Antenna and Negative Resistance Diode Oscillator
See 0227

JACOBSON, K. A.
Biologically-Active Xanthine Derivatives
See 0045
Functionalized Congeners of Adenosine Receptor Agonists
See 0907
Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056

JAIN, A.
Method and Apparatus for Delta Kappa Synthetic Aperture Radar Measurement of Ocean Current
See 0199

JAIN, A. K.
Coherent Array of Josephson Oscillators with External Bias Leads
See 0241
Transmission Line Biased Coherent Array of Josephson Oscillators
See 0298

JAMES, S. L.
Isolated, Soluble Immunogen Against 'Schistosoma mansoni' and a Method of Vaccination Employing Same
See 0918

JANOSKI, E. J.
Method for Removing Chlorine Compounds from Hydrocarbon Mixtures
See 0393

JARRETT, B. R.
Digital Coherent Detector
See 0248

JARVIS, N. L.
Biological Sensor for the Detection of Toxicants
See 0505
Method and Apparatus for the Detection of Toxicants
See 0584

JATKO, W. B.

JATKO, W. B.
Precision Linear Ramp Function Generator
See 0278

JEFFRIES, R. A.
Process for Producing Carbide Coatings
See 0767

JEFFRIES, T. W.
Process for Enhanced Fermentation of Xylose to Ethanol
See 0937

JENSEN, K. A.
Textured Carbon Surfaces on Copper
See 0770

JETT, J. H.
Apparatus for Eliminating Background Interference in Fluorescence Measurements
See 0850

JIN, K. K.
Improved Magnetic Bias and Delay Linearity in a Magnetostatic Wave Delay Line
See 0325

JOCHIM, M. M.
Monoclonal Antibodies to Epizootic Hemorrhagic Disease Virus Antigen
See 0928

JOHNSON, D. H.
Salinity Driven Oceanographic Upwelling
See 0023

JOHNSON, D. L.
Reciprocating Magnetic Refrigerator Employing Tandem Porous Matrices within a Reciprocating Displacer
See 0423

JOHNSON, J. L.
Over the Wing Propeller
See 1110

JOHNSON, S. A.
Fiber Optics Interface for a Dye Laser Oscillator and Method
See 0999

JOHNSTON, A. R.
Focal Plane Array Optical Proximity Sensor
See 1042

JOHNSTON, D. F.
Induction Heating Gun
See 0414

JOHNSTON, G. D.
Insulation Bonding Test System
See 0565

JOHNSTON, M. H.
Laser Schlieren Crystal Monitor
See 0568

JONES, C. R.
Exploding Conducting Film Laser Pumping Apparatus
See 0998

JONES, J. A.
Ten Degree Kelvin Hydride Refrigerator
See 0428

JONES, L. E.
Plasticizer System for Propellant Compositions
See 0070

JONES, S. C.
Monoclonal Antibodies to Epizootic Hemorrhagic Disease Virus Antigen
See 0928

JONES, S. H.
Fall Velocity Indicator/Viewer
See 0535

JONES, T. E.
Metallized Synthetic Cable
See 0372

JONES, T. M.
Production of High-Analysis Ammonium Orthophosphate Suspension Fertilizers by a New Batch-Type Process
See 0020

JOSEPH, J. D.
Electro-Optical Target Detection
See 0171

JOYNER, W. R.
Soil Sampling Apparatus
See 0628

JOZUKA, M.
Serial Impact Printer for Multicolor Printing
See 0986

JUNCOS, J. L.
Cold Plate for Laboratory Use
See 0852

JUNOD, M. T.
Programmable Multichannel Sonobuoy Transmitter
See 0164

JURD, L.
Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxbenzenes in Insect Population Control
See 0072

JUSTUS, J. J.
Three-Stage Binary Coincidence Detector Apparatus with Adaptive Constant False Alarm Rate
See 0114

KABACOFF, L. T.
Analog Frequency Modulated Laser Using Magnetostriction
See 0989

KALAN, A.
Cut Angles for Quartz Crystal Resonators
See 0320

KALINA, D. G.
Method for Extracting Lanthanides and Actinides from Acid Solutions by Modification of Purex Solvent
See 0031

KALSHOVEN, J. E.
Method of and Apparatus for Measuring Temperature and Pressure
See 0587

KANIA, D. R.
Fast Shutter Apparatus
See 0665

KANTOR, G.
Helical Coil for Diathermy Apparatus
See 0859

KAPLAN, P. D.
Tropospheric Scatter Communication System Having Angle Diversity
See 0116

KAPLAN, R.
Method for the Deposition of High-Quality Crystal Epitaxial Films of Iron
See 1092

KARPETSKY, T. P.
Isoelectric Focussing-Polynucleotide/Polyacrylamide Gel Electrophoresis
See 0917

KARTIK, J. S.
Stud Hardware with Self-Contained Stud Anti-Rotation Feature and Method of Installing Studs
See 0158

KATZ, J.
Arrangement for Damping the Resonance in a Laser Diode
See 0990

KATZ, J. L.
Survivable Local Area Network
See 0111

KATZ, T. J.
Preparation of Polymers of Functionalized Acetylenes
See 0074

KAUN, T.
Lithium Aluminum/Iron Sulfide Battery Having Lithium Aluminum and Silicon as Negative Electrode
See 0466

KAUN, T. D
Fuel Cell Electrode and Method of Preparation
See 0459

KAUN, T. D.
Improved Cell Design for Lithium Alloy/Metal Sulfide Battery
See 0463

KAYSER, E. G.
Recrystallization of Hexanitrostilbene from Dimethylsulfoxide and Methanol
See 0081

KEDL, R. J.
Gas Hydrate Cool Storage System
See 0407

KEENAN, T. E.
Optical Non-Line-of-Sight Covert, Secure High Data Communication System
See 0105

KELLER, T. M.
Epoxy Phthalonitrile Polymers
See 0822

Fluorinated Polyesters
See 0826

Fluorinated Polyurethanes
See 0827

Processable and Stable Conductive Polymers
See 0833

KELLER, V. W.
Double Window Viewing Chamber Assembly
See 0522

KELLEY, H. L.
Helicopter Anti-Torque System Using Strakes
See 1107

KELLY, T. P.
Structural Pressure Sensitive Silicone Adhesives
See 0753

KEMKA, R. F.
Connector/Nitinol delta Contact Force Device
See 0305

KEMME, J. E.
Thermal Protection Apparatus
See 0481

KENDRICK, L. A.
Production of High-Analysis Ammonium Orthophosphate Suspension Fertilizers by a New Batch-Type Process
See 0020

KENT, A. C.
Device and Method for Measuring the Energy Content of Hot and Humid Air Streams
See 0518

Psychrometer for Measuring the Humidity of a Gas Flow
See 0613

KEOUGH, R. F.
Lithium Purification Technique
See 0802

KEPLER, R. G.
Radiation-Hardened Polymeric Films
See 0834

KEREKES, P.
Carbamates of Colchicine for Treatment of Gout
See 0046

KERR, J. H.
Photorefractor Ocular Screening System
See 0871

KERSHNER, D. D.
Miniature Electrooptical Air Flow Sensor
See 0591

KESLER, L. D.
ADCCP (Advanced Data Communication Control Procedure) Communication Processor
See 0091

KHANNA, S. K.
Corrosion Resistant Coating
See 0800

KIDWELL, D.
Selective Detection of Species in Complex Matrices by SIMS (Secondary Ion Mass Spectrometry)
See 0029

KILLEEN, K. P.
Visible and Ultraviolet Lasers Based on Excimer Transitions in the Homonuclear Halogens
See 1026

KIM, K. J.
Gyrotron Traveling-Wave Device Including Quarter Wavelength Anti-Reflective Dielectric Layer to Enhance Microwave Absorption
See 0365

KING, A. D.
Method for Detecting Aflatoxin in Almonds
See 0009
Method for Predicting the Acceptability of Coarsely Ground Beef
See 0010

KING, E. E.
Radiation Hardened Ion-Implanted GaAs Field Effect Transistor and Method for Making the Same Specification
See 0350

KING, R. L.
Method of Enhancing the Removal of Methane Gas and Associated Fluids from Mine Boreholes
See 0959

KING, T. M.
Programmable Realtime Interface between a Block Floating Point Processor and Memory
See 0208

KING, W. J.
Automatic Pattern Recognition Apparatus
See 0357

KINNEY, D. C.
Nickel-Cadmium Battery Conditioner and Tester Apparatus
See 0471

KIRK, K. L.
Biologically-Active Xanthine Derivatives
See 0045
Functionalized Congeners of Adenosine Receptor Agonists
See 0907
Medical Applications of Functionalized Congeners of Adenosine Receptor Drugs
See 0056

KIRKHAM, R. R.
Fiber Optic Moisture Sensor
See 0540

KISSEL, R.
Angular Measurement System
See 0494

KLAYMAN, D. L.
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889
2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
See 0896

KLEEMANN, E.
Tire Deflation Mechanism
See 0489

KLEES, R. M.
Dual Mode Radio Frequency-Infrared Frequency System
See 0968

KLEIN, J. A.
Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

KLEIN, P. H.
Recovery of Fragile Layers Produced on Substrates by Chemical Vapor Deposition
See 1096

KLEINBERG, L. L.
Reactanceless Synthesized Impedance Bandpass Amplifier
See 0282
Temperature Sensitive Oscillator
See 0296

KLESIUS, P. H.
Implantation Device for Use In vivo Stimulation and Collection of Monocytes from Peritoneum of Vertebrate
See 0860

KLIMEK, J.
Method and Apparatus for the Pressing and Alignment of Radially Oriented Toroidal Magnets
See 0328

KLINGLER, R. J.
Method and System for Producing Lower Alcohols
See 0392

KLOCKSIEBEN, R. H.
Apparatus for Sampling and Characterizing Aerosols
See 0501

KLUN, J. A.
Bagworm Moth Attractant and Plant Protectant
See 0044

KNOER, P.
Fluidized Bed Gasification of Extracted Coal
See 0388

KNOKE, G. S.
Hydraulic Mining Method
See 0955

KOCH, C. C.
Metallic Glass Composition
See 0805

KOCH, P.
Wood Beam
See 0848

KOCIMSKI, S. M.
Apparatus and Method for Identification of Matrix Materials in Which Transuranic Elements Are Embedded Using Thermal Neutron Capture gamma-Ray Emission
See 0026

KODA, N. J.
Liquid Crystal Light Valve Structures
See 1052

KOENIG, J. F.
Control System for Fluid Heated Steam Generator
See 0405

KOJIRO, D. R.
Modulated Voltage Metastable Ionization Detector
See 0593

KOLESAR, E. S.
Gas Contamination Detection Device
See 0548

KOLIWAD, K. M.
New Solar Cell Design for Improved Open Circuit Voltage and High Efficiency
See 0434

KONIG, C. E.
Analog-to-Digital Converter
See 0118

KORB, C. L.
Method of and Apparatus for Measuring Temperature and Pressure
See 0587

KOSINSKI, J. A.
Method of Heating Quartz Resonators
See 0331

KOSKY, P. G.
Improved Catalysts for Carbon and Coal Gasification
See 0389

KOSMAL, B. A.
Pneumatic Clamping Device
See 0153

KOSSON, R.
Improved Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0413

KOSSON, R. L.
Monogroove Heat Pipe Design: Insulated Liquid Channel with Bridging Wick
See 0417

KOTECHA, H. N.
Two Carrier Dual Injector Apparatus
See 0354

KOURTIDES, D. A.
Fire and Heat Resistant Laminating Resins Based on Maleimido and Citraconimido Substituted 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diaminobenzenes
See 0823
Fire Blocking Systems for Aircraft Seat Cushions
See 1105
Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824
Light Weight Fire Resistant Graphite Composites
See 0781

KRAMER, D. P.
Pressurized Heat Treatment of Glass Ceramic
See 0721

KRASIJ, M.
Method of Preparing Thin Porous Sheets of Ceramic Material
See 0845

KRAVITZ, M.
Television Camera Video Level Control System
See 0113

KREPS, R. W.
Moisture Absorbing Anti-Arcing Coating and Method For Applying Same
See 0762

KRETA, S. J.
Latch for Detachably Securing Electronic Cards Along Orthogonal Loading Axes
See 0147

KRETSCHMER, F. F.
Adaptive MTI (Moving Target Indicator) System
See 0186
Adaptive Preprocessing System
See 0188
Interference Suppressor for Radar MTI
See 0196
P1 Polyphase Code Expander-Compressor
See 0209
P2 Polyphase Code Expander-Compressor
See 0210

KRIEG, H. C.
Moisture Content and Gas Sampling Device
See 0594

KRILE, D. J.

KRILE, D. J.
Switch Debounce Circuit
See 0292

KRISHNA, C. R.
Method of Burning Lightly Loaded Coal-Water Slurries
See 0394
Stabilizing Coal-Water Mixtures with Portland Cement
See 0402

KRIZ, R. D.
Systems for Monitoring Changes in Elastic Stiffness in Composite Materials
See 0635

KROEGER, D. M.
Metallic Glass Composition
See 0805

KUCHNIR, M.
Beam Current Sensor
See 0504

KULP, C. R.
Osteoclast for Whole Bone Testing
See 0870

KUMAR, M.
Dual-Gate MESFET Variable Gain Constant Output Power Amplifier
See 0250

KUMINECZ, J. F.
Spray Applicator for Spraying Coatings and Other Fluids in Space
See 0687

KUNKEL, T. A.
Process for Site-Specific Mutagenesis without Phenotypic Selection
See 0939

KUO, Y. S.
Ingot Slicing Machine and Method
See 0669

KUPERMAN, G. G.
Matrix Display Simulation
See 0371
Retinal Information Mapping System
See 0874
Stereoscopic Video Imagery Generation
See 0987

KUPPERMAN, D. S.
Ultrasonic Shear Wave Couplant
See 0648

KURTZ, S. R.
Conductor-Polymer Composite Electrode Materials
See 0775
Radiation-Hardened Polymeric Films
See 0834

KUSTU, S. G.
Method for Obtaining Periplasmic Proteins from Bacterial Cells Using Chloroform
See 0924

LACKEY, W. J.
Dispersion Toughened Ceramic Composites and Method for Making Same
See 0776
Improved Process for the Preparation of Fiber-Reinforced Ceramic Composites by Chemical Vapor Deposition
See 0780

LADELFE, P. C.
Thermal Sensor with an Improved Coating
See 0184

LAGAKOS, N.
Optical Fibers with Reduced Pressure Sensitivity to High Frequency Acoustic Field
See 1062
Temperature-Insensitive Optical Fibers
See 1073

LAGROSS, D. I.
Rain Rate Meter
See 0614

LAGROSS, D. L.
Snow Scale/Rate Meter
See 0626

LAHMEYER, C. R.
Reed-Solomon Decoder
See 0107

LAKIN, K. M.
Eddy Current Test Probe with Circumferential Segments and Method of Testing Material Surrounding Fastener Holes
See 0529

LAM, J. F.
Phased Locked Array Laser Systems
See 1017

LAMATTINA, F. J.
Test Target for Adaptive Optics
See 1074

LAMONTAGNE, M. P.
4-Methyl-5-(Unsubstituted and Substituted Phenoxy)-6-Methoxy-8-(Aminoalkylamino)Quinolines
See 0897

LAMPSON, A. I.
Axial Flow Laser Cavity
See 0991

LANCASTER, E. B.
Electronic Temperature Equalizer
See 0532

LANDINGHAM, R. L.
Porous Metallic Bodies
See 0814

LANDRAM, M. O.
Cryogenic Glass-to-Metal Seal
See 0741

LANG, C. H.
Flexible Line Support Assembly
See 0142
Thermally Isolated Structural Support Link
See 0429

LANGE, H. G.
Marginal Terrain Straddle-Lift Container Handler
See 1118

LANHAM, R. N.
Ultrasonic Shear Wave Couplant
See 0648

LANING, J. H.
Polaris Guidance System
See 0973

LANSING, F. L.
Stable Density Stratification Solar Pond
See 0443

LARSON, D. A.
Universal Ripper Miner
See 0966

LARSON, G. W.
Translating Rudder Pedal System
See 1115

LARSON, L. L.
Liquid Sampling System
See 0572

LARSON, S. M.
Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

LASCOLA, J. C.
Extensible Brattice Support System for Mine Face Ventilation
See 0954

LASHMORE, D. S.
Process and Bath for Electroplating Nickel-Chromium Alloys
See 0722

LAU, Y. Y.
Collective Interaction Klystron Specification
See 0361

LAUE, E. G.
Trace Water Sensor
See 0643

LAUF, R. J.
Dispersion Toughened Ceramic Composites and Method for Making Same
See 0776

LAUGHMAN, L. M.
Ground Slot Waveguide Laser
See 1000

LAUGHMAN, L. N.
Multiple Parallel RF Excited CO2 Lasers
See 1012

LAURENT, S. M.
Animal Nutrition
See 0001

LAURITZEN, T.
Apparatus Producing Constant Cable Tension for Intermittent Demand
See 0656

LAUSTEN, M. F.
Spray Applicator for Spraying Coatings and Other Fluids in Space
See 0687

LAUTENBERGER, J. A.
Production of Human T-Cell Leukemia (Lymphotropic) Retrovirus (HTLV-I) Envelope Protein Fragments in Bacteria and Use in Seroepidemiological Survey of Human Lymphoid Malignancies
See 0940

LAUVER, R. W.
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0047
Chemical Approach for Controlling Nadimide Cure Temperature and Rate
See 0048
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0049
Chemical Approach for Controlling Nadimide Cure Temperature and Rate with Maleimide
See 0050
Chemical Control of Nadimide Cure Temperature and Rate
See 0818

LAWHEAD, D. H.
Remote Sequential Gas Sampler for Blasting Areas
See 0618

LAWRENCE, K. E.
Concentric Micro-Nebulizer for Direct Sample Insertion
See 0513

LEDBETTER, M.
Method of Precisely Modifying Predetermined Surface Layers of a Workpiece by Cluster Ion Impact Therewith
See 0810

LEE, A. Y.
Production of Lead from Sulfides
See 0961

LEE, D. O.
Method for Determining Depth and Shape of a sub-Surface Conductive Object
See 0958
Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
See 0960

LEE, J. N.
Triple Matrix Product Optical Processors Using Combined Time-and-Space Integration
See 0135

LEE, J. Y.
Low Noise Polycrystalline Semiconductor Resistors by Hydrogen Passivation
See 0708

LEE, K.
Ethylenediamine Salt of 5-Nitrotetrazole and Preparation
See 0054
Preparation of Ethylenediamine Dinitrate
See 0073

LEE, R. D.
Electro-Expulsive Separation System
See 1103

LEE, R. K.
Very High Speed Lap with Negative Lift Effect
See 0692
Very High Speed Lap with Positive Lift Effect
See 0693

LEE, W. E.
Translating Rudder Pedal System
See 1115

LEIFFER, J. L.
Structural Pressure Sensitive Silicone Adhesives
See 0753

LENKER, D. H.
Wrapping Machine
See 0697

LEONHARDT, B. A.
Bagworm Moth Attractant and Plant Protectant
See 0044

LEUPOLD, H. A.
Lightweight Cladding for Magnetic Circuits
See 0266
Method and Apparatus for the Pressing and Alignment of Radially Oriented Toroidal Magnets
See 0328

LEVINE, S. R.
Overlay Metallic-Cermet Alloy Coating Systems
See 0763

LEVUSH, B.
Quasi-Optical Harmonic Gyrotron and Gyroklystron
See 0381

LEWIS, B. L.
Adaptive MTI (Moving Target Indicator) System
See 0186
Adaptive Preprocessing System
See 0188
Analog to Digital Converter
See 0237
Interference Suppressor for Radar MTI
See 0196
Orthogonalizer for Inphase and Quadrature Digital Data
See 0274
Phase Coded Pulse Expander-Compressor
See 0203
Phase-Coded Pulse Expander-Compressor
See 0205
Pulse Compression System
See 0106

LEWIS, E. N.
Translating Rudder Pedal System
See 1115

LEWIS, J. A.
Preparation of Pellets Containing Fungi and Nutrient for Control of Soilborne Plant Pathogens
See 0935

LEWIS, W. J.
Plasma Spray Screen Repair Method
See 0720

LIBESKIND, M.
Remote Optical Crack Sensing System
See 0617

LIEPINS, R.
Electron-Donor Dopant, Method of Improving Conductivity of Polymers by Doping Therewith, and a Polymer So Treated
See 0821

LIN, E. I. H.
Saltless Solar Pond
See 0438

LIN, S.
Polyaromatic Ether-Sulfone-Keytones with Fluoro-Substituted-P-Cyclophane Units as Cross-Linking Sites
See 0071

LITTLE, B. D.
Hot Melt Adhesive Attachment Pad
See 0745

LIU, C. T.
Long Range Ordered Alloys Modified by Addition of Niobium and Cerium
See 0803

LIU, K. Y.
Pipelined Digital SAR Azimuth Correlator Using Hybrid FFT-Transversal Filter
See 0207

LIU, Y. Z.
W-Shaped Diffused Stripe GaAs/AlGaAs (Gallium Arsenide/Aluminium Gallium Arsenide) Laser
See 1027

LIVINGSTON, R. W.
Diamond-Anvil High-Pressure Cell with Improved X-Ray Collimation System
See 0520

LLEWELLIN, W. R.
Non-Backdriveable Free Wheeling Coupling
See 0675

LOESER, H. T.
Tactical Expendable Device
See 0166

LONG, F. G.
High Pressure Liquid Level Monitor
See 0552

LORCH, D. L.
Air Bag Restraint System
See 1116
Torso Restraint System
See 1120

LOREE, T. R.
Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
See 0495

LOUIS, G. A.
Fuel Cell Separator Plate with Bellows-Type Sealing Flanges
See 0461

LUBITZ, P.
Solid State Hydrogen Pumping and Storage Material
See 0400

LUBNIEWSKI, S. E.
Wet Film Applicator
See 0696

LUCIA, J. T.
Test Device for Expendable Bathythermograph Set (XBT)
See 0638

LUCKACHINA, J. C.
Pivotable Support for Rescue Hoist
See 1119

LUDINGTON, C. E.
Self-Guarding Schottky Barrier Infrared Detector Array
See 0182

LUDMAN, J. E.
Holographic Directional Coupler for Fiber Optic Systems
See 1046
Optical Correlator
See 1060

LUKENS, F. E.
Measurement Amplifier
See 0268

LUKENS, J. E.
Coherent Array of Josephson Oscillators with External Bias Leads
See 0241
Transmission Line Biased Coherent Array of Josephson Oscillators
See 0298

LUTES, G. F.
Low Loss Splicing Method for Single-Mode Optical Fiber
See 1053

MABRY, H. E.
Improved Method and Apparatus for the Mass Rearing of Fruit Flies
See 0561

MCCANDLESS, B.
Connection System
See 0139

MCCLINTOCK, L. L.
EMI (Electromagnetic Interference) Filter Capacitor Unit
See 0252

MCCUTCHAN, T. F.
Intact Gene and Method of Excising and Cloning Same
See 0915

MCDONALD, A. B.
Powered Articulated Headrest System
See 0488

MCGIBONEY, R. L.
Low-Profile Fastener
See 0149

MCGLONE, J. T.
Low-Profile Fastener
See 0149

MCKEE, D. W.
Improved Catalysts for Carbon and Coal Gasification
See 0389

MACKELBURG, G. R.
Deep Ocean Wide Band Acoustic Baffle
See 0162

MCKELVEY, R. A.
Nonabsorbent Roller Applicator
See 0931

MCKELVEY, T. E.
Spring Loaded Thermocouple Module
See 0630

MCLAUCHLAN, J. M.
Optical Fiber Coupling Method and Apparatus
See 1061
Ranging System Which Compares an Object Reflected Component of a Light Beam to a Reference Component of the Light Beam
See 0616

MCLAUGHLIN, J. R.
Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0052
Novel Diolefin Pheromone Mimics as Disruptants of Sexual Communication in Insects
See 0932
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

MCLELLAN, G. H.

MCLELLAN, G. H.
Mirror Actuator Control System
See 0176

MCLENNAN, G. A.
Fast Reactor Power Plant Design Having Heat Pipe Heat Exchanger
See 0458

MCMILLAN, W. G.
Sub-Micron Particle Sampler Apparatus and Method for Sampling sub-Micron Particles
See 0632

MCNEILLY, D. R.
Precision Linear Ramp Function Generator
See 0278

MCPHAIL, A. T.
Pharmacologically Active Amine Boranes
See 0065

MAGIDMAN, P.
Shielded Sniffing Device
See 0625

MAHADEVAN, P.
Electrostatic Filtration of N2O4 for Removal of Solid and Vapor Contaminants
See 0053

MAIER, J. J.
Variable Data Base Generator Apparatus
See 0136

MAJOR, E. O.
Immortal Line of Human Fetal Glial Cells
See 0911

MALIK, R. J.
Monolithic Planar Doped Barrier Limiter
See 0346
Planar Doped Barrier Semiconductor Device
See 0349

MANASEVIT, H. M.
Process for Improving the Quality of Epitaxial Silicon Films Grown on Insulating Substrates
See 0723

MANHEIMER, W.
Quasi-Optical Harmonic Gyrotron and Gyroklystron
See 0381

MANHEIMER, W. M.
Quasioptical Gyroklystron
See 0382

MANKIEWICH, P. M.
Coherent Array of Josephson Oscillators with External Bias Leads
See 0241
Transmission Line Biased Coherent Array of Josephson Oscillators
See 0298

MANNIX, J. T.
Powered Articulated Headrest System
See 0488

MANUCCIA, T. J.
High Temperature Ultra-High Vacuum Infrared Window Seal
See 1005
Infrared Optical Measurement of Blood Gas Concentrations and Fiber Optic Catheter
See 0862

MAO, N. H.
Shear Wave Transducer for Boreholes
See 0624

MARANDO, R. J.
Improved Ship Deck Lifeline
See 0732

MAREL, C. S.
Pseudo-P-1,2,2,9,9,10,10-Octo-Fluoro(2,2)-P-Cyclophane Bis-Acid Chloride
See 0078

MARGALIT, S.
Arrangement for Damping the Resonance in a Laser Diode
See 0990

MARGOLIS, J. S.
Correlation Spectrometer Having High Resolution and Multiplexing Capability
See 0515

MARIANI, E. A.
Slot Line Tunable Bandpass Filter
See 0290
Wideband SAW (Surface Acoustic Wave) Channellizer Using Slanted Array Input Transducer
See 0302

MARKO, A. R.
Measurement of Visual Contrast Sensitivity
See 0922

MARRIAN, C. R. K.
Atomically Mixed Alloy Coated Cathodes Specification
See 0356
Method for Predicting the Performance of Cathode Materials
See 0329

MARSHALL, F. E.
Imaging X-Ray Spectrometer
See 0556

MARSHALL, R. T.
Spectrophotometric Method for Simultaneously Analyzing Protein and Fat Contents in Milk
See 0024

MARSHALL, T. C.
New Free Electron Laser Using a Relativistic Beam with Spiralling Electron
See 1013

MARTIN, J. C.
Apparatus for Eliminating Background Interference in Fluorescence Measurements
See 0850

MARTINIS, J. M.
Radiofrequency Amplifier Based on a DC Superconducting Quantum Interference Device
See 0281

MARTONCHIK, J. V.
Correlation Spectrometer Having High Resolution and Multiplexing Capability
See 0515

MARVEL, C. S.
Polyaromatic Ether-Sulfone-Keytones with Fluoro-Substituted-P-Cyclophane Units as Cross-Linking Sites
See 0071

MASAK, R. J.
Multiple Loop Sidelobe Canceller
See 0202

MASON, C. J.
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889

MASSIE, S. P.
2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
See 0896

MASSON, J. H.
Autonomous Uninterruptable Power Supply Apparatus
See 0447

MASTERS, D. R.
Non-Carbon Induction Furnace
See 0420

MATSUSHITA, S.
Therapeutic and Diagnostic Monoclonal Antibody Specific for Human T-Cell Leukemia Virus Type 1 Envelopes Protein
See 0950

MATTAUCH, R. J.
Low Stress Semiconductor-Insulator Interface for Cryogenic Device Applications
See 0342

MATTHEW, M. W.
Method of Precisely Modifying Predetermined Surface Layers of a Workpiece by Cluster Ion Impact Therewith
See 0810

MATTHEWS, A. J.
Fall Velocity Indicator/Viewer
See 0535
Snow Scale/Rate Meter
See 0626

MAYER, A. H.
Heat Management System for Aircraft
See 1106

MAYER, R. T.
Apparatus for Encapsulating Additives in Resealed Erythrocytes
See 0498

MAZARIS, G. A.
Screen Printed Interdigitated Back Contact Solar Cell
See 0439

MEADOWS, G. E.
Lithium Purification Technique
See 0802

MEEK, T. T.
Sodium Nitrate Containing Mixture for Producing Ceramic-Glass-Ceramic Seal by Microwave Heating
See 0752

MERCADO, T. I.
Lysis of 'Trypanosoma Cruzi'
See 0921

MERRIL, C. R.
Method for Simultaneously Monitoring Turnover Rate in Multiple Proteins
See 0926

MERRITT, F. L.
Heat Resistant Sheathed Insulated Electrical Conductors
See 0366
Small Cartridge Heater
See 0847

MEYER, R. A.
Method and Apparatus for Generating Monopulse Ultrasonic Signals
See 0270

MEYERS, W. N.
Tube Coupling Device
See 0159

MIENTEK, A. P.
Fuel Cell Separator with Compressible Sealing Flanges
See 0462

MIGLIORI, A.
Feedback Regulated Induction Heater for a Flowing Fluid
See 0406

MIHALKA, A. M.
Switching Power Supply
See 0294

MIKROYANNIDIS, J. A.
Fire and Heat Resistant Laminating Resins Based on Maleimido and Citraconimido Substituted 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diaminobenzenes
See 0823
Fire Resistant Polymers Based on 1-(Diorgano Oxyphosphonyl)Methyl-2,4- and 2,6-Diamino Benzenes
See 0824
Fire-Resistant Phosphorus Containing Compounds, Polyimides and Copolyimides
See 0055
Fire-Resistant Phosphorus Containing Polyimides and Copolyimides
See 0825

MILBERGER, W. E.
Fast Switching Driver for Inductive Load, Such as a Phase Shifter
See 0194
Miniature High Performance Pulsed Modulator Apparatus
See 0272

MILES, R. O.
External Cavity Diode Laser Sensor
See 0534

MILLER, D. L.
Method for Melt-Coating a Surface
See 0713

MILLER, G. W.
EMI (Electromagnetic Interference) Filter Capacitor Unit
See 0252

MILLER, R. E.
Topical Prophylaxis against Schistosomal Infections
See 0025

MILLER, R. L.
Test Device for Expendable Bathythermograph Set (XBT)
See 0638

MILLIGAN, T. A.
Hardwire Missile Receiver Coupler
See 0225

MILLS, F. E.
Beam Current Sensor
See 0504

MINER, J.
Drill Guide for Bone Plate Fixation
See 0853

MINTON, A. P.
Method and Apparatus for Sequential Fractionation
See 0583

MIRTICH, M. J.
Deposition of Diamondlike Carbon Films
See 0757
Oxidation Protection Coatings for Polymers
See 0764

MIZUACKI, K.
Method for Rapid DNA (Deoxyribonucleic Acid) Sequencing
See 0925

MOATS, R. R.
Slow Wave Circuit with Shaped Dielectric Substrate
See 0291

MODEN, J. R.
Dual Electrochemical System
See 0456

MOFFETT, M. B.
Lightweight, Broadband Rayleigh Wave Transducer
See 0327

MONGEON, R. J.
Dual Mode Scanner/Tracker
See 0170
Optical Radar Transceiver Control Apparatus
See 0177

MONTANA, D. M.
Range-Only Multistatic Radar System
See 0212

MONTOVANI, J. C.
Apparatus for Locating Passive Intermodulation Interference Sources
See 1083

MONTOYA, P. C.
Method for Determining Depth and Shape of a sub-Surface Conductive Object
See 0958
Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
See 0960

MOORADIAN, G. C.
Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
See 0585

MOORCROFT, A. L.
Precise Bearing Support Ditherer
See 0679
Precise Bearing Support Ditherer with Piezoelectric Drive Means
See 0680
Sampled Towed Array Telemetry
See 0165

MORAN, M. J.
Preparation of Simple Nitronium Salts
See 0075

MORRELL, R. J.
Universal Ripper Miner
See 0966

MORRIS, J. F.
High Thermal Power Density Heat Transfer Apparatus Providing Electrical Isolation at High Temperature Using Heat Pipes
See 0412

MORRISEY, E. J.
Compartmented, Filament Wound, One-Piece Aircraft Fuel Tanks
See 1101

MORRISON, A. D.
Low Defect, High Purity Crystalline Layers Grown by Selective Deposition
See 1088
Method for Growing Low Defect, High Purity Crystalline Layers
See 1089
Ribbon Growing Method and Apparatus
See 0436
Total Immersion Crystal Growth
See 1097

MORRISON, R. K.
Ovipositional Stimulant for Trichogramma Spp
See 0933

MORRISSEY, J. H.
Silver Stains for Protein in Gels-A Modified Procedure
See 0947

MROCHEK, J. E.
Disc Valve for Sampling Erosive Process Streams
See 0521

MUCHMORE, A. V.
Purification of Uromodulin
See 0893

MULLEN, P. G.
Multicomputer Communication System
See 0103

MUNSON, A. E.
Deep Submergence Vehicle (DSV) Lightweight Cable Cutter,
See 0729

MURPHY, L. M.
Cable Tensioned Membrane Solar Collector Module with Variable Tension Control
See 0431

MURRELL, K. D.
Diagnostic Reagent for Swine Trichinosis
See 0005

NASCIMENTO, D. F.
Wrapping Machine
See 0697

NASH, D.
Length Adjustable Strut Link with Low Aerodynamic Drag
See 0148

NASSOS-STALDER, P. S.
Method for Predicting the Acceptability of Coarsely Ground Beef
See 0010

NAUMANN, R. J.
Containerless High Purity Pulling Process and Apparatus for Glass Fibers
See 0662

NEACE, J. C.
Solvent Wash Solution
See 0038

NEAL, J. W.
Bagworm Moth Attractant and Plant Protectant
See 0044

NEGAS, T.
Process of Synthesizing Mixed BaO-TiO2 Based Powders for Ceramic Applications
See 0336

NELSON, M. D.
Optical Fiber Coupling Method and Apparatus
See 1061

NERAD, B. A.
Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
See 0408

NESSLAGE, G. V.
Method and Apparatus for Conducting Variable Thickness Vapor Deposition
See 0806

NETTLE, V. H.
RF Laser Array Driver Apparatus
See 1020

NETTLES, W. C.
Ovipositional Stimulant for Trichogramma Spp
See 0933

NEVILLE, D. M.
Prevention of Graft Versus Host Disease Following Bone Marrow Transplantation
See 0892

NEWMAN, B. A.
Piezoelectric Transducer Using Electrically Poled Gamma-Phase Nylon 11
See 0829

NEWNHAM, R. E.
Transversely Reinforced Piezoelectric Composites
See 0789

NICHOLSON, M. M.
Electrochromic Display Device
See 0362

NICKOLS, R. C.
Method of Preparing Thin Porous Sheets of Ceramic Material
See 0845
Molten Carbonate Fuel Cell Separator
See 0469

NIEDER, E. G.

NIEDER, E. G.
Propellant Plasticizer
See 0077

NIEHENKE, E. E.
Dielectric Resonator Stabilized Microstrip Oscillator
See 0247

NISHITA, K. D.
Method for Preparing Improved Quality Rice-Containing Baked Products
See 0011

NOLA, F. J.
Bi-Directional Control System for Energy Flow in a Solar Powered Flywheel
See 0450
Coupling an Induction Motor Type Generator to AC Power Lines
See 0455
Solar Powered Actuator with Continuously Variable Auxiliary Power Control
See 0441
Three-Phase Power Factor Controller with Induced EMF Sensing
See 0313

NORRIS, F. A.
Switch Debounce Circuit
See 0292

NOTO, R.
Routing Method in Computer Aided Customization of a Two Level Automated Universal Array
See 0284

NOTTHOFF, J. K.
Self-Detecting Optical Sensors
See 0385

NOVINSON, T.
Water Toxicity Field Test System
See 0953

NOWICKI, C. M.
Parallel Local Interface Bus
See 0133

NUMRICH, S. K.
Calibration Method for Acoustic Scattering Measurements Using a Spherical Target
See 0506

NUTI, M.
Monoclonal Antibodies Reactive with Human Breast Cancer
See 0927
Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
See 0938

ODEN, L. L.
Ductile Duplex Iron-Based Alloy Containing Aluminum
See 0801

O'DONNELL, B. N.
Adaptive Mutual Interference Suppression Method
See 0187

O'HARE, T. E.
Low Temperature Catalyst System for Methanol Production
See 0390

OHLMANN, R. C.
Method of Producing a Buried Long Period Grating
See 1058

OHMURA, K.
Serial Impact Printer for Multicolor Printing
See 0986

OLINGER, B. W.
Diamond-Anvil High-Pressure Cell with Improved X-Ray Collimation System
See 0520

OLOFF, C. M.
Guided Trephine Samples for Skeletal Bone Studies
See 0858

O'LOUGHLIN, J. P.
High Efficiency Electron Beam Gun Foil Support
See 0323

OLSEN, R. A.
Improvements in Linked-Spar Motion-Compensated Lifting System
See 0733

OLSON, C. L.
Short Rise Time Intense Electron Beam Generator
See 0287

O'MEARA, T. R.
Jinc-Trap Resonator
See 1007

O'REAR, J. G.
Fluorinated Diacrylic Esters
See 0744

ORTWERTH, P. J.
Axial Flow Laser Cavity
See 0991

OSBOURN, G. C.
Field-Effect Transistor Having a Superlattice Channel and High Carrier Velocities at High Applied Fields
See 0339

OSTERWALD, C. R.
Method and Apparatus for Measuring Areas of Photoelectric Cells and Photoelectric Cell Performance Parameters
See 0579

OTAGAWA, T.
Electrochemical Methane Sensor
See 0530

OTT, E.
Quasioptical Gyroklystron
See 0382

OTTO, W. F.
Simple Power Meter for High Energy Pulsed Lasers
See 1021

OUTLAW, R. A.
Precision Manipulator Heating and Cooling Apparatus for Use in UHV (Ultrahigh Vacuum) Systems with Sample Transfer Capability
See 0681

OWEN, R. B.
Laser Schlieren Crystal Monitor
See 0568

OWENS, R. A.
Sensitive and Rapid Diagnosis of Viroid Diseases and Viruses
See 0946

OZAWA, T.
Portable Reflectance Spectrometer
See 0610

PACALA, T. J.
Magnetically Switched Power Supply Systems for Lasers
See 1008

PACINI, D.
Low Voltage Two Wire to Four Wire Telephone Circuit Converter Apparatus
See 0101

PAE, K. D.
Piezoelectric Transducer Using Electrically Poled Gamma-Phase Nylon 11
See 0829

PAGE, N. A.
Optical System
See 1065

PAGE, R. E.
Remote Self-Contained Undersea Monitor
See 0736

PALATUCCI, G. J.
Parallel Local Interface Bus
See 0133

PALMER, M. R.
Corrosion Inhibitor Formulation for Molybdenum, Tungsten and Other Metals
See 0799

PANAYAPPAN, R.
Rusty Bolt Intermodulation Interference Reducer
See 0816

PAPANICOLAOU, N. A.
TiW Diffusion Barrier for AuZn Ohmic Contacts to P-Type InP
See 0353

PAPAS, T. S.
Production of Human T-Cell Leukemia (Lymphotropic) Retrovirus (HTLV-I) Envelope Protein Fragments in Bacteria and Use in Seroepidemiological Survey of Human Lymphoid Malignancies
See 0940

PAPAVIZAS, G. C.
Preparation of Pellets Containing Fungi and Nutrient for Control of Soilborne Plant Pathogens
See 0935
Strain of 'Trichoderma viride' to Control Fusarium Wilt
See 0948

PAPELL, S. S.
Vortex Generating Flow Passage Design for Increased Film Cooling Effectiveness
See 1098

PARK, E. Y.
Rubber Modified Epoxy Adhesive
See 0750

PARKER, J. A.
Fire Blocking Systems for Aircraft Seat Cushions
See 1105
High Performance Mixed Bisimide Resins and Composites Based Thereon
See 0779
Light Weight Fire Resistant Graphite Composites
See 0781
Metal (11) 4,4',4',4''-Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0828
Metal (2) 4,4',4',4'' Phthalocyanine Tetraamines as Curing Agents for Epoxy Resins
See 0057
Phosphorus-Containing Imide Resins
See 0067
Phthalocyanine Polymers
See 0068

PARSONS, D. I.
Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

PARTHASARATHY, S. P.
Carbon Granule Probe Microphone for Leak Detection
See 0509

PASTAN, I.
Pseudomonas Exotoxin Conjugate Immunotoxins
See 0941

PATTERSON, R. H.
Optical Non-Line-of-Sight Covert, Secure High Data Communication System
See 0105

PAUL, P. S.
Monoclonal Antibodies to Porcine Immunoglobulins
See 0929

PAULSON, D. L.
Production of Lead from Sulfides
See 0961

PAVLATH, A. E.
Fluorination by Inorganic Fluorides in Glow Discharge
See 0760

PAWLOSKI, G. A.
Quantitative Determination of Mineral Composition by Powder X-ray Diffraction
See 0028

PAYER, S. F.
Fast Switching Driver for Inductive Load, Such as a Phase Shifter
See 0194

PEASE, R. E.
Longwall Shearer Tracking System
See 0956

PECH, G. J.
Liquid Crystal Non-Destructive Inspection of Metals
See 0570

PECK, C. C.
Dermal Substance Collection Device
See 0516

PEEBLES, L. H.
Adhesive Joint Formation under Field Conditions
See 0138

PEELE, J. R.
High Temperature Ultra-High Vacuum Infrared Window Seal
See 1005

PELISCHEK, T. E.
Foldable Self-Erecting Joint
See 0143

PELLEGRINI, P. W.
Self-Guarding Schottky Barrier Infrared Detector Array
See 0182

PELLIN, M. J.
Excimer Laser Phototherapy for the Dissolution of Vascular Obstruction
See 0906

PEPI, J. W.
Fine Figuring Actuator
See 1041

PERKINS, R. W.
Measurement of Radionuclides in Waste Packages
See 0027

PERRY, J. H.
Remote Sequential Gas Sampler for Blasting Areas
See 0618

PERRY, J. S.
Attachment Method-Ceramic Radome to Metal Body
See 0699

PERT, C. B.
Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

PETERSEN, E. R.
Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

PETERSON, D. L.
Apparatus to Improve the Operation of a Continuously Moving Harvester for Tree Crops
See 0002

PETERSON, N. C.
Technique of Assembling Structures Using Vapor Phase Soldering
See 0726

PETERSON, P. R.
Bandpass Filter Formed by Serial Gratings Operating in a Wood's Anomaly Region
See 1030

Double Pinhole Spatial Phase Correlator Apparatus
See 1036

PETOIA, S. R.
Multi-Directional Straddle-Lift Carrier
See 0673

PETTIBONE, D. W.
Two-Dimensional Bulk Acoustic Wave Correlator-Convolver
See 0299

PFEILER, W. A.
Non-Carbon Induction Furnace
See 0420

PHATAK, R. G.
Air Blast Type Coal Slurry Fuel Injector
See 0387

PHELPS, A. E.
Helicopter Anti-Torque System Using Strakes
See 1107

PHILIPP, W. H.
Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446

PHILLIPS, J. K.
Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

PHILLIPS, R. J.
Demountable Coaxial Electrical Connector for In-Line Amplifiers
See 0306

PICKETT, T. L.
Hydraulic Locking Boltwork System
See 0146

PINKERTON, A. L.
Heat Sinking for Printed Circuitry
See 0257

PINNOW, D. A.
Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
See 1047

PISCITELLA, R. R.
Woven Heat Exchanger
See 0430

PITT, C. G.
Chelating Agents for the Treatment of Iron Overload
See 0886

PITTENGER, R. L.
Dual Mode Radio Frequency-Infrared Frequency System
See 0968

PITTS, J. R.
Electron Beam Enhanced Surface Modification for Making Highly Resolved Structures
See 0701

Method of Bonding Silver to Glass and Mirrors Produced According to This Method
See 0717

PLANK, V. G.
Fall Velocity Indicator/Viewer
See 0535

Rain Rate Meter
See 0614

Snow Scale/Rate Meter
See 0626

PLANTE, R. L.
Vibration Isolator Actuator
See 0695

PLICHTA, E. J.
Cathode Including a Non Fluorinated Linear Chain Polymer as the Binder, Method of Making the Cathode, and Lithium Electrochemical Cell Containing the Cathode
See 0452

Rechargeable Lithium Cell
See 0476

PLUMMER, J. D.
Two-Dimensional Bulk Acoustic Wave Correlator-Convolver
See 0299

POA, D. S.
Secondary Battery Containing Zinc Electrode with Modified Separator and Method
See 0478

POHLE, R. H.
Method of Producing a Buried Long Period Grating
See 1058

POLLARD, H. B.
Isolation and Culture of Adrenal Medullary Endothelial Cells Producing Blood Clotting Factor VIII: C
See 0919

POMPHREY, P. J.
Interface Alignment System
See 1048

POND, W. G.
Animal Nutrition
See 0001

POORMAN, R. M.
Low Gravity Exothermic Heating/Cooling Apparatus
See 0415

POPE, M.
Vibration Dosimeter
See 0882

PORTWOOD, J. N.
Insulation Bonding Test System
See 0565

POSHKUS, A. C.
Synthesis of 2,4,8,10-Tetroxaspiro5,5undecane
See 0086

POTENZIANI, E.
Method and Apparatus for the Pressing and Alignment of Radially Oriented Toroidal Magnets
See 0328

POULSEN, P. D.
Longwall Shearer Tracking System
See 0956

PRAEG, W. F.
Coaxial Test Fixture
See 0360

PRAGER, J.
Apparatus and Circuits for Two-Color Printing in Electronic Impact Printers
See 0976

PROCTOR, P. W.
Nozzle for Self-Contained Cutting Torches
See 0676

PROGAR, D. J.
Hot Melt Adhesive Attachment Pad
See 0745

PRUETT, J. C.
Solar System Fault Detection
See 0425

PRYDE, E. H.
Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
See 0015

PSALTIS, D.

Microemulsions from Vegetable Oil and Lower Alcohol with Octanol Surfactant as Alternative Fuel for Diesel Engines
See 0396

PSALTIS, D.

Ranging System Which Compares an Object Reflected Component of a Light Beam to a Reference Component of the Light Beam
See 0616

PUNIA, D. T.

Vibration Dosimeter
See 0882

PURCELL, R. H.

Isolation of Hepatitis A Virus Strain HM-175
See 0920

PUROHIT, A.

Nitriding of Super Alloys for Enhancing Physical Properties
See 0811

PUSTER, R. L.

System for Controlling the Oxygen Content of a Gas Produced by Combustion
See 0634

PYLES, C. H.

Simple Power Meter for High Energy Pulsed Lasers
See 1021

QADER, S. A.

Solar-Heated Oil Shale Retort
See 0442

QUEEN, R. B.

Double Window Viewing Chamber Assembly
See 0522

QUINLAN, K. P.

Process for the Epitaxial Deposition of III-V Compounds Utilizing a Binary Alloy as the Metallic Source
See 1095

Process for the Epitaxial Deposition of III-V Compounds Utilizing a Continuous In-Situ Hydrogen Chloride Etch
See 0035

QUINN, J. J.

Superlattice Ultrasonic Wave Generator
See 1069

RADDATZ, A. E.

Formation of Tungsten Monocarbide from a Molten Tungstate-Halide Phase by Gas Sparging
See 0840

RADIO, G. T.

High Switching Speed Electrically Tuned Microwave Magnetic Resonance Devices
See 0261

RADZIEMSKI, L. J.

Apparatus and Method for the Spectrochemical Analysis of Liquids Using the Laser Spark
See 0495

RAFF, B. E.

Expendable Bathythermograph for Measuring Light Attenuation and Temperature Below the Ocean Surface
See 0731

RAGAN, R. R.

Polaris Guidance System
See 0973

RALEIGH, M.

Coaxial Probe for Measuring the Current Density Profile of Intense Electron Beams
See 0512

RAMACHANDRAN, K.

(Vinyloxy)Chlorocyclotriphosphazenes
See 0040

RAND, J. L.

Thin Film Strain Transducer
See 0639

RANDIG, G. W.

Survivable Ground Base Sensor
See 0214

RAO, D. M.

Leading Edge Flap System for Aircraft Control Augmentation
See 1109

RAPTIS, A. C.

Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
See 0491

RASHLEIGH, S. C.

Fiber Optic Gyroscope with Alternating Output Signal
See 0969

Fiber Optic Sensors Operating at DC
See 0541

RAST, G. J.

Electronically Controlled Array for Simulation of Passive Target/Background Signatures at Millimeter Wavelengths
See 0193

RATH, A. R.

Apparatus for Unilateral Generation of a Homogeneous Magnetic Field
See 0319

RATHKE, J. W.

Method and System for Producing Lower Alcohols
See 0392

RAUSCHER, C.

Optical Injection Locking of Solid-State Oscillators by Frequency-Multiplexed Injection-Locked, Laser Diodes
See 0377

Transistor Oscillator/Doubler
See 0297

REAMES, D. J.

In-Situ Annular Face Grinder
See 0668

REARICK, T. C.

Digital High Speed Programmable Convolver
See 0124

REDFERN, J. T.

Method of Making an Undersea, High Pressure Buikhead Penetrator for Use with Fiber Optic Cables
See 0734

REDMON, J. W.

Impacting Device for Testing Insulation
See 0557

REEDY, R. E.

Integrated Wavelength Demultiplexer
See 0369

Optoelectronic Integrated Circuit Multiplier
See 1066

REHBEIN, T. J.

Programmable Synchronous Digital Delay Line
See 0279

REICH, R. S.

Deep Submergence Vehicle (DSV) Lightweight Cable Cutter,
See 0729

REICHMAN, B.

Method for Determining the Point of Zero zeta Potential of Semiconductors
See 0586

REID, W. A.

Topical Prophylaxis against Schistosomal Infections
See 0025

REINHARDT, B. A.

Thermally Stable Thermoset Resin Compositions
See 0837

Thermosetting Arylether Compounds and Their Synthesis
See 0090

REINHARDT, R. M.

Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0793

Process to Produce Durable Press Low Formaldehyde Release Cellulosic Textiles
See 0794

REPPERGER, D. W.

Biodynamic Resistant Control Stick
See 1100

Random Pattern Tracking Acceleration Tolerance Tester
See 0615

REUSS, M. L.

Combined Microwave Parallel Amplifier-RF Attenuator/Modulator
See 0242

REUTER, H. A.

Apparatus for Retrieving, Placing, and Stocking Trays from an Automatic Storage and Retrieval Carousel
See 0655

Robotic Order Picking
See 0683

REX, J. D.

Infrared System with Computerized Image Display
See 0172

RHIM, W. K.

Closed Loop Electrostatic Levitation System
See 0304

RICE, G. W.

Concentric Micro-Nebulizer for Direct Sample Insertion
See 0513

RICE, K. C.

Metaphit, a Specific Acylating Agent for the (sup 3)H Phencyclidine
See 0058

Synthesis and Utilization of 17-Methyl and 17-Cyclopropylmethyl-3,14-Dihydroxy-4, 5alpha-Epoxy 6beta-Fluoromorphinans (Foxy and Cyclofoxy) as ((sup 18)F)-Labeled Opioid Ligands for Positron Emission Transaxial Tomography (PETT)
See 0083

RICE, R. W.

BN (Boron Nitrates) Coating of Ceramic Fibers for Ceramic Fiber Composites
See 0756

Hot Rolling of Ceramics by the Use of Self Propagating Synthesis
See 0704

RICHARDS, E. S.

Energizing Arrangement for Charge Coupled Device Control Electrodes
See 0253

RICHARDS, P.

New Method for the Selective Labeling of Erythrocytes in Whole Blood with Tc-99M
See 0930

RICHARDSON, G.

Heat Sinking for Printed Circuitry
See 0257

RICHARDSON, J. R.

Photorefractor Ocular Screening System
See 0871

RICHARDSON, W. M.

Stud Hardware with Self-Contained Stud Anti-Rotation Feature and Method of Installing Studs
See 0158

RIECK, H. G.

Measurement of Radionuclides in Waste Packages
See 0027

RIEGER, H.

Fiber Optics as an Angular Sensor
See 0543

RITCHIE, R. S.
Slide Release Mechanism
See 0157

RITTER, C.
Moisture Absorbing Anti-Arcing Coating and Method For Applying Same
See 0762

RITTER, J. J.
Process of Synthesizing Mixed BaO-TiO2 Based Powders for Ceramic Applications
See 0336

ROBBEN, F. A.
Superheated Fuel Injection for Combustion of Liquid-Solid Slurries
See 0403

ROBERT-GUROFF, M.
Therapeutic and Diagnostic Monoclonal Antibody Specific for Human T-Cell Leukemia Virus Type 1 Envelopes Protein
See 0950

ROBERTS, T. G.
Pulsed Digital Multiplexed Laser Generator
See 1019

ROBINSON, P. A.
FET Charge Sensor and Voltage Probe
See 0539

RODBARD, D.
Dimeric Enkephalins
See 0887

RODMAN, B. K.
Plasticizer System for Propellant Compositions
See 0069

ROEDER, A. W.
Sample Data Phase Locked Loop for Adaptive Doppler Tracker
See 0285
Simultaneous Detection of Time Coincident Signals in an Adaptive Doppler Tracker
See 0109

ROEDER, S. B. W.
Apparatus for Unilateral Generation of a Homogeneous Magnetic Field
See 0319

ROGERS, P. H.
Directional Line-Hydrophone Array Calibrator
See 0163

ROMAN, R. F.
Textured Carbon Surfaces on Copper
See 0770

ROOP, D. R.
Synthetic Peptides for the Production of Specific Keratin Proteins
See 0087

ROSATI, V. J.
Suppression of Vibration Effects on Piezoelectric Crystal Resonators,
See 0338

ROSECRANS, P. M.
Manufacturing Process to Reduce Large Grain Growth in Zirconium Alloys
See 0804

ROSEN, H. N.
Device and Method for Measuring the Energy Content of Hot and Humid Air Streams
See 0518
Psychrometer for Measuring the Humidity of a Gas Flow
See 0613

ROSENBERG, A. H.
Cloning and Expression of the Gene for Bacteriophage T7 RNA Polymerase
See 0901

ROSENBERG, H.
Synthesis of Arylene Siloxanylene Polymers and Copolymers
See 0084

ROSS, B.
Increased Voltage Photovoltaic Cell
See 0432

ROTH, R. S.
Process of Synthesizing Mixed BaO-TiO2 Based Powders for Ceramic Applications
See 0336

ROTHENBERG, C.
Wide Angle Phased Array Dome Lens Antenna with a Reflection/Transmission Switch
See 0235

ROWE, J.
Membrane Processes for Separation of Organic Acids from Kraft Black Liquors
See 0841

ROWE, R. A.
Wave Powered Buoy Generator
See 0739

ROWE, R. W.
Nuclear Medicine Imaging System
See 0869

ROWLETTE, J. J.
State-of-Charge Coulometer
See 0631

ROYCE, R. K.
Compact Wideband Multiple Conductor Monopole Antenna
See 0220

ROYSTER, D. M.
Curved Cap Corrugated Sheet
See 1102

ROZNIECKI, E. J.
Adjustment Structure
See 0653

RUDD, M. J.
Laser Vibrometer
See 0569

RUFFIN, P. B.
Device for Controlling Optical Fiber Twist on a Bobbin
See 1033

RUGGERA, P. S.
Helical Coil for Diathermy Apparatus
See 0859

RUITBERG, A. P.
High Voltage Isolation Transformer
See 0324
High Voltage Power Supply
See 0262

RUOFF, C. F.
Retinally Stabilized Differential Resolution Television Display
See 0181

RUSCIC, B. M.
Vacuum Ultraviolet Laser
See 1025

SABO, J. D.
Polaris Guidance System
See 0973

SAFFREN, M. M.
Closed Loop Electrostatic Levitation System
See 0304

ST. CLAIR, A. K.
Elastomer Toughened Polyimide Adhesives
See 0743
Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
See 0831
Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785
Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
See 0765
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766

ST. CLAIR, T. L.
Elastomer Toughened Polyimide Adhesives
See 0743
Process for Preparing Essentially Colorless Polyimide Film Containing Phenoxy-Linked Diamines
See 0765
Process for Preparing Highly Optically Transparent-Colorless Armomatic Polyimide Film
See 0766
Process for Preparing Solvent Resistant, Thermoplastic Aromatic Poly(Imidesulfone)
See 0832
Thermoset-Thermoplastic Aromatic Polyamide Containing n-Propargyl Groups
See 0838

SALIK, J.
Ion-Beam Nitriding of Steels
See 0707

SALOMON, M.
Cathode Including a Non Fluorinated Linear Chain Polymer as the Binder, Method of Making the Cathode, and Lithium Electrochemical Cell Containing the Cathode
See 0452
Rechargeable Lithium Cell
See 0476

SALOUR, M. M.
Transmissive Dewar Cooling Chamber for Optically Pumped Semiconductor Ring Lasers
See 1024

SALVI, T. C.
Unstable Optical Resonator with Cancelling Edge Waves
See 1079

SAMUEL, K.
Production of Human T-Cell Leukemia (Lymphotropic) Retrovirus (HTLV-I) Envelope Protein Fragments in Bacteria and Use in Seroepidemiological Survey of Human Lymphoid Malignancies
See 0940

SANDFORD, W. H.
Programmable Multichannel Sonobuoy Transmitter
See 0164

SANDS, T. D.
Rim-Drive Cable-Aligned Heliostat Collector System
See 0437

SAPIENZA, R. S.
Low Temperature Catalyst System for Methanol Production
See 0390
Low Temperature Catalysts and Process for Methanol Production
See 0391
Physico-Chemical Fracturing and Cleaning of Coal
See 0397

SATANEK, J. I.
Process for Preparation of Crosslinked Poly(tri-n-butyltin) Methacrylate with Simultaneous Particle Size Reduction
See 0076

SAUNDERS, G. C.
Improved Flow Cytometer Measurement of Binding Assays
See 0559

SAUNDERS, J. M.
Insulation Bonding Test System
See 0565

SAVAGE, S. J.

SAVAGE, S. J.
Method for Continuously Casting
See 0712

SAXINGER, W. C.
Competitive ELISA (Enzyme-Linked Immunosorbent Assay) for the Detection of Antibodies
See 0902

SAYLES, D. C.
Microwave Drying of Ammonium Perchlorate Grinding Spheres
See 0718
Recovery of Alcohol from a Fermentation Source by Separation Rather Than Distillation
See 0080

SCAHILL, J. W.
Fluidizing Device for Solid Particulates
See 0666

SCANLAN, R. M.
Aluminum-Stabilized Nb sub 3 Sn Superconductor
See 0798

SCANNON, P. J.
Intramolecularly Crosslinked Hemoglobin
See 0916

SCHACK, C. J.
Method for Introducing Fluorine into an Aromatic Ring
See 0059
Pentafluorotelluriumoxide Fluorocarbons
See 0064

SCHADE, J. E.
Method for Detecting Aflatoxin in Almonds
See 0009

SCHEINBEIM, J. I.
Piezoelectric Transducer Using Electrically Poled Gamma-Phase Nylon 11
See 0829

SCHERTZ, W. W.
Composite Desiccant Structure
See 0774

SCHIFERL, D.
Diamond-Anvil High-Pressure Cell with Improved X-Ray Collimation System
See 0520

SCHLECHTWEG, R. E.
High Pressure Turbine Rotor Two-Piece Blade Retainer
See 0145

SCHLESINGER, S. P.
New Free Electron Laser Using a Relativistic Beam with Spiralling Electron
See 1013

SCHLOM, J.
Monoclonal Antibodies Reactive with Human Breast Cancer
See 0927
Process for Producing Monoclonal Antibodies Reactive with Human Breast Cancer
See 0938

SCHMID, L. A.
Temperature-Controllable Heat Valve
See 0427

SCHMIDT, F.
Method for Preparing High Purity Vanadium
See 0808

SCHMITZ, J. P.
Polyactic-Polyglycolic Acid Copolymer Combined with Decalcified Freeze-Dried Bone for Use as a Bone Repair Material
See 0872

SCHNEIDER, I.
Polarimetric Image Recorder
See 0983

SCHNEIDER, J. F.
Charge Depletion Meter
See 0510

SCHNEIDER, R. T.
Fly's Eye Sensor Nonlinear Signal Processing
See 0546

SCHRANK, H. E.
Loop Radiating Elements
See 0228

SCHULZE, W. E.
Transversely Reinforced Piezoelectric Composites
See 0789

SCHUMMERS, J. H.
Infrared System with Computerized Image Display
See 0172

SCHUTT, J. B.
Diffusely Reflecting Paints Including Polytetrafluoroethylene and Method of Manufacture
See 0759

SCHWAB, A. W.
Microemulsions from Vegetable Oil and Aqueous Alcohol with 1-Butanol Surfactant as Alternative Fuel for Diesel Engines
See 0015
Microemulsions from Vegetable Oil and Lower Alcohol with Octanol Surfactant as Alternative Fuel for Diesel Engines
See 0396

SCHWARTZ, J. W.
Balanced System for Ranging and Synchronization between Satellite Pairs
See 0092

SCHWARZ, M.
Bagworm Moth Attractant and Plant Protectant
See 0044

SCHWEITZER, E. I.
Forward Field Autotransfusion Device
See 0857

SCHWEITZER, E. J.
Suture Needle Holder
See 0878

SCHWERING, F.
Integrated Dual Beam Line Scanning Antenna and Negative Resistance Diode Oscillator
See 0227

SCOTESE, A.
Remote Optical Crack Sensing System
See 0617

SCOTT, D. G.
Electrically Conductive Containment Vessel for Molten Aluminum
See 0141

SCOTT, D. H.
Aluminum Battery Alloys
See 0797

SCOTT, W. R.
Laser Generation of Ultrasonic Waveform Reconstructions
See 0567
Laser Generation of Ultrasonic Waveform Reconstructions
See 1049

SCOVILL, J. P.
Method for Treating Bacterial Infections with 2-Acetyl- and 2-Propionylpyridine Thiosemicarbazones
See 0889
2-Acetyl Quinoline Thiosemicarbazones Useful in Treatment of Gonorrhea, Malaria or Bacterial Infections
See 0896

SCULLY, C. N.
Laser Target Speckle Eliminator
See 1050

SCURO, S. J.
High Current Fiber Brush Collector and Method for Making Same
See 0309

SEARS, B. D.
In-Situ Annular Face Grinder
See 0668

SEHMEL, G. A.
Prospecting by Sampling and Analysis of Airborne Particulates and Gases
See 0962

SELF, H. L.
Hydraulic Locking Boltwork System
See 0146

SELISKAR, C. J.
Low-Pressure Water-Cooled Inductively Coupled Plasma Torch
See 0574

SEPPALA, L. G.
Fiber Optics Interface for a Dye Laser Oscillator and Method
See 0999

SERLIN, V.
IREB (Intense Relativistic Electron Beam) Converter to AC Pulses
See 0465

SEROTA, S.
Rapid Production of Ispropenyl Esters
See 0079

SETO, B.
Purified Antigen from Non-A, Non-B Hepatitis Causing Factor
See 0942
Screening Test for Reverse-Transcriptase Containing Virus
See 0945

SHACK, R. V.
Optical System
See 1065

SHAHEEN, J. M.
Multiconductor Flat Cable
See 0375

SHAI, M. C.
Diffusely Reflecting Paints Including Polytetrafluoroethylene and Method of Manufacture
See 0759

SHAJENKO, P.
Optical Sensing Devices
See 0178

SHANNON, R. R.
Optical System
See 1065

SHAW, J. C.
(Vinyloxy)Chlorocyclotriphosphazenes
See 0040

SHEEM, S. K.
Wavelength Multiplexer-Demultiplexer
See 0117

SHEEN, S. H.
Acoustic Cross-Correlation Flowmeter for Solid-Gas Flow
See 0491

SHEIBLEY, D. W.
Alkaline Battery Containing a Separator of a Cross-Linked Copolymer of Vinyl Alcohol and Unsaturated Carboxylic Acid
See 0446

SHENKIR, C. A.
Ovipositional Stimulant for Trichogramma Spp
See 0933

SHEPHERD, F. D.
Self-Guarding Schottky Barrier Infrared Detector Array
See 0182

SHERRILL, G.
Low Stress Semiconductor-Insulator Interface for Cryogenic Device Applications
See 0342

SHIELDS, M. W.
Printed Circuit Balun with a Dipole Antenna
See 0232

SHIH, A.
Atomically Mixed Alloy Coated Cathodes Specification
See 0356
Method for Predicting the Performance of Cathode Materials
See 0329

SHIMOHIGASHI, Y.
Dimeric Enkephalins
See 0887

SHLICHTA, P. J.
Glass Heating Panels and Method for Preparing the Same from Architectural Reflective Glass
See 0408
Method for Growth of Crystals by Pressure Reduction of Supercritical or Subcritical Solution
See 1090

SHOOK, D. R.
Improved Toposcopic Catheter and Method of Fabrication
See 0861

SHOR, J. T.
Method for Controlling the Viscosity of Siloxane Oils
See 0842

SHORES, D. A.
Electrolyte Reservoir for Carbonate Fuel Cells
See 0457

SHOWALTER, S. D.
Enzyme-Linked Immunosorbent Assay (ELISA) for Determining Anti-Bodies against Herpes Simplex Virus (HSV) Types 1 and 2 in Human Sera
See 0905

SICA, L.
High Resolution Diffraction Grating
See 1045

SIEGEL, C. M.
Epitaxial Thinning Process
See 0702

SILVERTHORN, L. J.
Hardward Interpreter for Finite State Automata
See 0098

SIMON, W. E.
Lateral Support System for Canister-Launched Missile
See 0746

SIMPSON, J. E.
Bipolar Digitizer Having Compression Capability
See 0239

SIMPSON, R. E.
Machine for Mixing and Injecting Water and Grout into a Roof Bolt Hole
See 0957

SINEX, C. H.
Expendable Bathythermograph for Measuring Light Attenuation and Temperature Below the Ocean Surface
See 0731

SINGER, I. L.
Process for Producing Carbide Coatings
See 0767

SINGER, P. A.
Pseudo Atmospheric Noise Generator having Variable Amplitude Probability Distributions and Discharge Fine Structure
See 0380

SINGH, J. J.
Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785
System for Controlling the Oxygen Content of a Gas Produced by Combustion
See 0634
Technique for Measuring Gas Conversion Factors
See 0636

SKAALEN, C. I.
Marginal Terrain Straddle-Lift Container Handler
See 1118

SKOLNIK, L. H.
Buried Junction Enhanced Schottky Barrier Device
See 0167

SKOTHEIM, T.
Polymer Blends for Use in Photoelectrochemical Cells for Conversion of Solar Energy to Electricity
See 0435

SKOTHEIM, T. A.
Method of Synthesizing Polymers from a Solid Electrolyte
See 0062

SKUDERA, W. J.
Analog-to-Digital Converter
See 0118
Wideband SAW (Surface Acoustic Wave) Channellizer Using Slanted Array Input Transducer
See 0302

SLACK, R. A.
Constant Rise AGC (Automatic Gain Control) Device
See 0244

SLEGEIR, W. A.
Low Temperature Catalyst System for Methanol Production
See 0390

SLEGEIR, W. A. R.
Physico-Chemical Fracturing and Cleaning of Coal
See 0397

SLOBODNIK, A. J.
Dielectric Resonator Oscillators with Digital Temperature Compensation
See 0246
SAW Oscillator with Digital Compensation for the Temperature Related Frequency Changes
See 0286

SMITH, D. C.
Routing Method in Computer Aided Customization of a Two Level Automated Universal Array
See 0284

SMITH, H. W.
Osteoclast for Whole Bone Testing
See 0870

SMITH, P. R.
Titanium Metal-Matrix Composites
See 0788

SMITH, T.
Apparatus for Non-Destructive Inspection of Blind Holes
See 0500

SMITH, T. S.
Diagnostic Apparatus for Radar Pulse Repetition Frequency Control Circuit Card
See 0192

SMITHERS, M. E.
Unstable Optical Resonator with Cancelling Edge Waves
See 1079

SMYRL, W. H.
Conductor-Polymer Composite Electrode Materials
See 0775

SNYDER, C. E.
Fluorinated Aliphatic Polyalkylether Lubricant with an Additive Composed of an Aromatic Phosphine Substituted with Perfluoroalkylether Groups
See 0839

SNYDER, F. L.
Antihypertensive Neutral Lipid
See 0041

SODERHOLM, L. H.
Output Responsive Field Control for Wind-Driven Alternators and Generators
See 0472

SONNET, P. E.
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0088

SOREF, R.
Length Dependent, Optical Time Delay/Filter Device for Electrical Signals
See 0370
Wavelength Dependent, Tunable, Optical Time Delay System for Electrical Signals
See 0386

SOVEY, J. S.
Deposition of Diamondlike Carbon Films
See 0757
Oxidation Protection Coatings for Polymers
See 0764

SPEZIO, A.
Optical RF Downconverter
See 1064

SPIELVOGEL, B. F.
Pharmacologically Active Amine Boranes
See 0065

SPIRO, C. L.
Improved Catalysts for Carbon and Coal Gasification
See 0389

SPRINGSTON, P. S.
Marginal Terrain Straddle-Lift Container Handler
See 1118
Prefabricated Panels for Rapidly Runway Repair and Expedient Airfield Surfacing
See 0784
System for Rapid Repair of Damaged Airfield Runways
See 0836

SPRINKLE, D. R.
Technique for Measuring Gas Conversion Factors
See 0636

SPYCHALSKI, S. E.
Broadband Matching Network
See 0161

SRIVASTAVA, S. C.
Indium-111 Labeled Anti-Melanoma Monoclonal Antibodies
See 0914
New Method for the Selective Labeling of Erythrocytes in Whole Blood with Tc-99M
See 0930
Palladium-109 Labeled Anti-Melanoma Monoclonal Antibodies
See 0934

SRIVASTAVA, S. K.
Means and Method for Calibrating a Photon Detector Utilizing Electron-Photon Coincidence
See 0174

ST.CLAIR, T. I.
Structural Pressure Sensitive Silicone Adhesives
See 0753

ST.CLAIR, T. L.
Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785

STACEY, A. B.

STACEY, A. B.
Mechanical Fastener
See 0150

STACEY, J. M.
Method of Measuring Sea Surface Water Temperature with a Satellite Including Wideband Passive Synthetic-Aperture Multichannel Receiver
See 0589

STANSBURY, J. W.
Biocompatible Cementitious Dental Compositions
See 0740

STECURA, S.
Improved Thermal Barrier Coating System
See 0761
Thermal Barrier Coating System
See 0771

STEIN, R. J.
Longwall Shearer Tracking System
See 0956

STEINBERG, M.
Portland Cement for SO sub 2 Control in Coal-Fired Power Plants
See 0398
Process for the Production of Ethylene and Other Hydrocarbons from Coal
See 0036
Stabilizing Coal-Water Mixtures with Portland Cement
See 0402

STEINER, W. R.
Arithmetic Pipeline for Image Processing
See 0119

STEINERT, P. M.
Synthetic Peptides for the Production of Specific Keratin Proteins
See 0087

STELLO, S. L.
Data Collection System
See 0123

STEPHENS, J. B.
Trace Water Sensor
See 0643

STEPHENS, R. R.
Imaging Apparatus for Transverse Electrode Electro-Optic Tunable Filter
See 1047

STEPHENS, W. D.
Plasticizer System for Propellant Compositions
See 0069
Plasticizer System for Propellant Compositions
See 0070
Propellant Plasticizer
See 0077

STEPHENSON, M. J.
UF Sub 6 -Recovery Process Utilizing Desublimation
See 0039

STERN, R. A.
Slot Line Tunable Bandpass Filter
See 0290

STETTER, J. R.
Electrochemical Methane Sensor
See 0530

STEVENSON, H. C.
Human Monocytes Cultured in Suspension in Serum-Free Medium
See 0908

STEVENSON, J. R.
Deoxyribonucleic Acid Molecules Useful as Probes for Detecting Deleterious Genes Incorporated into Chromosomal DNA
See 0903

STIFFEY, A. V.
Biological Sensor for the Detection of Toxicants
See 0505
Method and Apparatus for the Detection of Toxicants
See 0584

STINTON, D. P.
Dispersion Toughened Ceramic Composites and Method for Making Same
See 0776

STITZER, S. N.
Frequency Selective Signals-to-Noise Enhancer/Limiter Apparatus
See 0255

STOAKLEY, D. M.
Process for Improving Mechanical Properties of Epoxy Resins by Addition of Cobalt Ions
See 0831
Process for Improving Moisture Resistance of Epoxy Resins by Addition of Chromium Ions
See 0785

STONEBURNER, J. D.
Acoustic Particle Separation
See 0030

STOOPS, W. E.
Structural Pressure Sensitive Silicone Adhesives
See 0753

STOTLAR, S. C.
Thermal Sensor with an Improved Coating
See 0184

STOTTS, L. B.
Method for Determining in situ the Absorption Coefficient of Particulate Media Using Pulsed Laser Technique
See 0585

STOUT, E. I.
Modified Starches as Extenders for Absorbent Polymers
See 0016

STOUT, V. F.
Polyunsaturated Fatty Acids from Fish Oils
See 0017

STOVER, H. A.
Communications Network Status Information System
See 0094

STRAUB, R.
New Method for the Selective Labeling of Erythrocytes in Whole Blood with Tc-99M
See 0930

STRICKLAND, B. R.
Automated Calibration Technique for Non-Field Perturbing (Electrically Small) Electromagnetic Field Sensors
See 0503

STRIKER, R. P.
Convective Heat Flow Probe
See 0453

STROM, U.
Fast Granular Superconducting Bolometer
See 0536
Superlattice Ultrasonic Wave Generator
See 1069

STRUBE, R. E.
4-Methyl-5-(Unsubstituted and Substituted Phenoxy)-6-Methoxy-8-(Aminoalkylamino)Quinolines
See 0897

STUDIER, F. W.
Cloning and Expression of the Gene for Bacteriophage T7 RNA Polymerase
See 0901

STUTLER, R. A.
Scanning Alarm Electronic Processor
See 0623

SUGARBAKER, P. H.
Medical Apparatus
See 0865

SULESKE, A. A.
Improved Ship Deck Lifeline
See 0732

SUPPLEE, F. H.
Two-Axis, Self-Nulling Skin Friction Balance
See 0647

SUSZKO, S. F.
Method of Examining Microcircuit Patterns
See 0344

SWAIM, R. J.
Induction Heating Gun
See 0414

SWAN, K. G.
Forward Field Autotransfusion Device
See 0857

SWARR, T. E.
Method of Preparing Thin Porous Sheets of Ceramic Material
See 0845

SWEENEY, P. C.
Process and Compositions for Preserving Fresh Hides and Skins
See 0846

SWENSON, H. W.
Sensor System
See 0183

SWENSON, R. C.
Variable Length and Sensor Spacing Thermistor Array,
See 0649

SWIFT, G. W.
Feedback Regulated Induction Heater for a Flowing Fluid
See 0406

SYDNOR, R. L.
Maser Cavity Servo-Tuning System
See 1009

SZU, H. H.
Spatial Frequency Multiplexed Coherent Optical Processor for Calculating Generalized Moments
See 1067

TABATABAIE-ALAVI, K.
Dual Species Ion Implantation of Ternary Compounds Based on In-Ga-As
See 1085

TABOADA, J.
Method and Apparatus for Generating a Structured Light Beam Array
See 1056

TAKAHASHI, T.
Polyethylene Imine-Metal Salt Solid Electrolyte
See 0474

TAMBORSKI, C.
Fluorinated Aliphatic Polyalkylether Lubricant with an Additive Composed of an Aromatic Phosphine Substituted with Perfluoroalkylether Groups
See 0839

TANTON, G. A.
Nondestructive Noncontact Device to Characterize Semiconductor Material
See 0600

TASCHNER, E. C.
Rotor Blade Test Apparatus
See 0622

TASK, H. L.
Helmet Mounted Telescope
See 1043
Night Vision Compatible Illumination for Vehicle Crewmember Workspace
See 0419
Removable Cleanable Antireflection Shield
See 1114

Vision Test Chart and Method Using Gaussians
See 0883

TAUBER, A.
Method and Apparatus for the Pressing and Alignment of Radially Oriented Toroidal Magnets
See 0328

TAVERNA, A. R.
Erosion-Resistant Nosetip Construction
See 0777
Erosion-Resistant Nosetip Construction
See 0778

TAYLOR, A. H.
Daze Fasteners
See 0140
Lightweight Piston
See 0782

TAYLOR, C. H.
Small Cartridge Heater
See 0847

TAYLOR, E.
Mechanical Locking between Multi-Layer Printed Wiring Board Conductors and Through-Hole Plating
See 0269

TAYLOR, H. F.
Extended Precision in Video Bandwidth Analog to Digital Converter Using Optical Techniques
See 0364
Optical Injection Locking of Solid-State Oscillators by Frequency-Multiplexed Injection-Locked, Laser Diodes
See 0377
Optically Triggered Transferred-Electron Device Microwave Burst and Single Pulse Generators
See 0273

TCHENG, P.
Two-Axis, Self-Nulling Skin Friction Balance
See 0647

TERANISHI, R.
Method and Composition for Luring Coyotes
See 0923

TERNES, M. P.
Gas Hydrate Cool Storage System
See 0407

TERVO, J. N.
Termination Load Carrying Device
See 0689

THACKER, L. H.
Precision Linear Ramp Function Generator
See 0278

THAKOOR, A. P.
Corrosion Resistant Coating
See 0800

THAL, H. L.
Dual Mode Directionally Coupled Band Reject Filter Apparatus
See 0249

THOMAS, G. O.
Elevator/Hatch Controller Platform Leveling Logic with Safety Features
See 0730

THOMAS, T. M.
Method of Bonding Silver to Glass and Mirrors Produced According to This Method
See 0717

THOMPSON, D. S.
Aluminum Battery Alloys
See 0797

THOMPSON, W. S.
Erosion-Resistant Nosetip Construction
See 0778

THORNHILL, J. W.
Process and Apparatus for Growing a Crystal Ribbon
See 0034

TIPPIE, R. J.
High Voltage RF Coaxial Cable
See 0367

TKACHUK, P. R.
Dynamic Pressure Test Unit-Ratio Method
See 0527

TOBOADA, J.
Method and Apparatus for Generating a Structured Light Beam Array
See 1055

TODARD, G. J.
Substantially Purified Tumor Growth Inhibitory Factor (TIF)
See 0895

TOMERAASEN, P. L.
Ferromagnetic Resonance Probe Liftoff Suppression Apparatus
See 0538

TORKELSON, H.
Current Stabilized Underwater Platform
See 0728

TRACY, C. E.
Silicon Nitride Protective Coatings for Silvered Glass Mirrors
See 0769
Thermoelectric Generator and Method for the Fabrication Thereof
See 0484

TRAISTER, M. S.
Cargo Handling System
See 0659

TRAVLOS, C. M.
Contact Insertion and Wire Lay Robotic End Effector Apparatus
See 0661

TREBINO, F. P.
Optically Pumped Laser System Having Extracavity Pulse Smoother
See 1015

TREVITS, M. A.
Method of Enhancing the Removal of Methane Gas and Associated Fluids from Mine Boreholes
See 0959

TRIAS, J.
Improved Real-Time Ultra-High Resolution Image Projection Display Using Laser-Addressed Liquid Crystal Light Valve
See 0368

TROMBKA, J. I.
Method and Apparatus for Mapping the Distribution of Chemical Elements in an Extended Medium
See 0578

TSAI, T. T.
Di-Acetylenyl-Substituted 2-Phenylbenzothiazoles
See 0051
Method for Making Heterocyclic Block Copolymers
See 0060
Synthesis of Arylene Siloxanylene Polymers and Copolymers
See 0084

TSANG, C. F.
Thermal Well-Test Method
See 0482

TSUI, J. B. Y.
Instantaneous Frequency Measurement Receiver with Digital Processing
See 0563
Signal Analysis Receiver with Acousto-Optic Delay Lines
See 0286

TUBBS, E. F.
Ranging System Which Compares an Object Reflected Component of a Light Beam to a Reference Component of the Light Beam
See 0616

TUMLINSON, III, J. H.
Synthetic Pheromone and Its Use in Controlling the Southern Corn Rootworm and Related Diabroticites
See 0068

TURCHI, P. J.
Power Circuit Utilizing Self-Excited Hall Effect Switch Means
See 0276

TURCZYN, M.
Device for Simulating Stress on Packages during Coupling of Railcars
See 0519

TURNER, T. M.
Dual Differential Interferometer
See 0525

TVETEN, A. B.
External Cavity Diode Laser Sensor
See 0534
Technique for the Reduction of Fading in Interferometers
See 1071

TYE, R. W.
Preparation of Stroma-Free, Non-Heme Protein-Free Hemoglobin
See 0936

ULFERS, B. G.
Apparatus for Determining the Liquid Water Content of a Gas
See 0497

VADAKAN, V. V.
Multicomputer Communication System
See 0103

VALLEY, C. R.
Apparatus for Etching Vertical Junction Solar Cell Wafers
See 0698

VAN BUREN, A. L.
Apparatus and Method for Determining the Phase Sensitivity of Hydrophones
See 1081

VAN DEUSEN, R. A.
Monoclonal Antibodies to Porcine Immunoglobulins
See 0929

VAN ETTEN, P.
Detection of Angular Modulated Electromagnetic Signals
See 0191

VANTUCCI, J.
Drill Guide for Bone Plate Fixation
See 0853

VARDIMAN, R. G.
Wear Improvement in Titanium Alloys by Ion Implantation
See 0817

VARGAS, R. I.
Improved Method and Apparatus for the Mass Rearing of Fruit Flies
See 0561

VARMA, I. K.
Phosphorus-Containing Imide Resins
See 0067

VELLEY, C. R.
Solar Cell Coverslide Extraction Method and Apparatus
See 0686

VERDIER, J. E.
Photo-Reconnaissance System
See 0982

VIG, J. R.
Acceleration Insensitive Oscillator
See 0314

VIGO, T. L.

Acceleration Resistant Combination of Opposite-Handed Piezoelectric Crystals
See 0315

Acceleration Sensitivity Reduction Method
See 0316

Method of Fabricating Acceleration Resistant Crystal Resonators and Acceleration Resistant Crystal Resonators so Formed
See 0330

VIGO, T. L.

Temperature Adaptable Textile Fibers and Method of Preparing Same
See 0795

VILNROTTER, V. A.

Synchronization Tracking in Pulse Position Modulation Receiver
See 0112

VITTORIA, C.

Amplitude and Phase Modulation in Fin-Lines Electrical Tuning
See 0355

High Switching Speed Electrically Tuned Microwave Magnetic Resonance Devices
See 0261

Solid State Hydrogen Pumping and Storage Material
See 0400

VOELKER, F.

Broad-Band Beam Buncher
See 0358

VOGELSONG, T. L.

Parallel Programmable Charge Domain Device
See 0347

Pipelined Programmable Charge Domain Device
See 0348

VOGL, O.

Stabilized Unsaturated Polyesters
See 0082

VON GIERKE, H. E.

Measurement of Visual Contrast Sensitivity
See 0922

VON GULFELD, R. J.

Apparatus for Generating a Focusable and Scannable Ultrasonic Beam for Non-Destructive Examination
See 0499

VONPRAGENAU, G. L.

Damping Seal for Turbomachinery
See 0742

VONROOS, O.

Method and Apparatus for Measuring Minority Carrier Lifetime in a Direct Band-Gap Semiconductor
See 0580

VREELAND, S. W.

Battery Charger
See 0448

VYKUKAL, H. C.

Elbow and Knee Joint for Hard Space Suits and the Like
See 0854

Shoulder and Hip Joint for Hard Space Suits and the Like
See 0877

Torso Sizing Ring Construction for Hard Space Suit
See 0879

WADE, W. L.

Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451

Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

WADE, W. R.

Improved Legislated Emergency Locating Transmitters and Emergency Position Indicating Radio Beacons
See 1117

WAGAMAN, K. L.

Method of Preparing Tetrahydrofuran
See 0061

WAGSTAFF, R. A.

Nonlinear Technique for High-Resolution Data Processing
See 0132

WALGENBACH, C. A.

Synthetic Pheromone 5-Hydroxy-4-Methyl-3-Heptanone and Its Use in Controlling Grain Weevils
See 0089

WALKER, C. G.

Nondestructive Noncontact Device to Characterize Semiconductor Material
See 0600

WALKER, C. W.

Cathode for Use in High Energy Primary Thionyl Chloride Cell Systems and High Energy Primary Thionyl Chloride Cell Systems Including the Cathode
See 0451

Method of Pretreating Carbon Black Powder to Improve Cathode Performance and Lithium Sulfuryl Chloride Cell Including the Pretreated Carbon Black Powder
See 0468

WALKER, E. C.

Blood Pressure Cuff Calibration System
See 0851

WALKER, H. L.

Control of Eastern Black Nightshade with a Fungal Pathogen
See 0003

WALKER, R. P.

Infrared System with Computerized Image Display
See 0172

WALLACE, G. A.

Circumferentially Wrapped Carbon-Carbon Structure
See 0773

WALLQUIST, D. L.

Retinal Information Mapping System
See 0874

WALLS, F. L.

Acceleration Insensitive Oscillator
See 0314

WALLSOM, R. E.

Self-Locking Mechanical Center Joint
See 0685

WALSH, M. J.

Combined Riblet and Lebu Drag Reduction System
See 0727

WANG, C. C.

Liquid-Phase Epitaxial Growth of CdTe on HgCdTe
See 1087

WANG, C. L.

Microchannel Plate Streak Camera
See 0590

WANG, S. S.

Apparatus for Generating a Focusable and Scannable Ultrasonic Beam for Non-Destructive Examination
See 0499

WANG, T.

Acoustic Particle Separation
See 0030

WARE, K. D.

Exploding Conducting Film Laser Pumping Apparatus
See 0998

WARNER, D. K.

Low-Pressure Water-Cooled Inductively Coupled Plasma Torch
See 0574

WATERS, W. M.

Digital Coherent Detector
See 0248

WATKINS, R. W.

High Output Programmable Signal Current Source for Low Output Impedance Applications
See 0260

WATKINS, V. E.

Structural Pressure Sensitive Silicone Adhesives
See 0753

WAYLAND, J. R.

Method for Determining Depth and Shape of a sub-Surface Conductive Object
See 0958

Methods for Enhancing Mapping of Thermal Fronts in Oil Recovery
See 0960

WAYNE, R. J.

Optical Radar Transceiver Control Apparatus
See 0177

WEBB, W. E.

Short Range Trapped Miner Locator
See 0964

WEEKS, M. M.

Self-Guarding Schottky Barrier Infrared Detector Array
See 0182

WEHUNT, E. J.

Soil Sampling Apparatus
See 0628

WEI, G. C.

Silicon Carbide Whisker Reinforced Composites and Method for Making Same
See 0786

WEIGLE, R. M.

Drill Guide for Bone Plate Fixation
See 0853

WEINBERG, I.

Lithium Counterdoped Silicon Solar Cell
See 0433

WEINSTEIN, L. M.

Continuous Laminar Smoke Generator
See 0514

Liquid Thickness Gage
See 0573

WEISER, K.

Fast Granular Superconducting Bolometer
See 0536

WEISS, C. S.

Shale Oil Dearsenation Process
See 0399

WEIXEL, M.

Double Pinch-Push Contact Insertion End-Effector
See 0663

WELCH, C. M.

Abrasion-Resistant Durable-Press Acrylic Finishes for Cotton Textiles by Use of Nonoxidative Polymerization Initiators and Accelerators in Two-Stage Heat Curing
See 0790

Mild-Cure Formaldehyde-Free Durable-Press Finishing of Cotton Textiles with Glyoxal and Glycols
See 0791

WELLER, D. M.

Method for Screening Bacteria and Application Thereof for Field Control of Pythium spp. on Small Grain Crops
See 0013

LLER, J. F.
ntrolled-Linewidth Laser Source
e 0992
tical Injection Locking of Solid-State Oscillators
Frequency-Multiplexed Injection-Locked, Laser
odes
e 0377
tically Triggered Transferred-Electron Device
crowave Burst and Single Pulse Generators
e 0273

LLER, S. W.
ethod of Distributing Liquefaction Catalysts in
lid Carbonaceous Material
e 0395

LLS, J. D.
gh Energy Laser Mirror
e 1002

NG, T. H.
W Diffusion Barrier for AuZn Ohmic Contacts to
-Type InP
e 0353

STERFIELD, E. E.
ransdigitizer for Relaying Signals from Global Po-
tioning System (GPS) Satellites
e 0974

STFALL, L. J.
rc Spray Fabrication of Metal Matrix Composite
Monotape
See 0772

HIPPLE, R. D.
Extended Moment Arm Anti-Spin Device
See 1104

HITE, E. R.
Over the Wing Propeller
See 1110

HITE, J. D.
Passive Maser Using Timesharing for Control of
the Cavity and Control of the Oscillator on the Line
of Stimulated Emission
See 1016

HITE, P. R.
Improved Fluid Flow Meter for Measuring the Rate
of Fluid Flow in a Conduit
See 0560

HITE, W. L.
Double Window Viewing Chamber Assembly
See 0522

HITNEY, W. T.
Improved Operation of Transversely Exited N2O
Lasers
See 1006

HITSEL, R.
Parallel Local Interface Bus
See 0133

IEDER, H. H.
Process for Making a Heterojunction Source-Drain
Insulated Gate Field-Effect Transistors Utilizing Dif-
fusion to Form the Lattice
See 0724

IER, J. P.
Integrated Wheelchair and Ambulator
See 0863

IKER, G. A.
Automatic Multi-Banking of Memory for Micro-
processors
See 0120

ILGER, J. F.
In-Situ Annular Face Grinder
See 0668

ILKINS, J. R.
Flow Through Bacteria Detection System
See 0856

WILKINSON, H. T.
Method and Apparatus to Control Soil Moisture
Matric Potential
See 0008

WILLIAMS, R. M.
Corrosion Resistant Coating
See 0800

WILLINGHAM, M. C.
Pseudomonas Exotoxin Conjugate Immunotoxins
See 0941

WILSON, D. M.
Control of Mycotoxin Production by Chemically In-
hibiting Fungal Growth
See 0004

WILSON, J. C.
Helicopter Anti-Torque System Using Strakes
See 1107

WILSON, M. E.
Wide-Angle Flat Field Telescope
See 1080

WILSON, S. K.
Heat Sinking for Printed Circuitry
See 0257

WINIECKI, A. L.
Remote Temperature-Set-Point Controller
See 0619

WIRICK, M. P.
Technique to Reduce Scattered Light in Optical
Systems
See 1072

WITKOVER, R. L.
Optical Analog Data Link with Simple Self-Test
Feature
See 0104

WITUCKI, E. F.
Azido Nitramino Ether Containing Solid Propellants
See 0042
Azido Nitramino Ethers
See 0043

WOGMAN, N. A.
Measurement of Radionuclides in Waste Packages
See 0027

WOHLTJEN, H.
Biological Sensor for the Detection of Toxicants
See 0505
Method and Apparatus for the Detection of Toxi-
cants
See 0584
Method for Bonding Insulator to Insulator
See 0747
Reversible Optical Waveguide Vapor Sensor
See 0620

WOLF, S. A.
Fast Granular Superconducting Bolometer
See 0536

WOLFE, J. F.
Thermoset-Thermoplastic Aromatic Polyamide
Containing n-Propargyl Groups
See 0838

WONG-STAAL, F.
Production of Human T-Cell Leukemia (Lymphotro-
pic) Retrovirus (HTLV-I) Envelope Protein Frag-
ments in Bacteria and Use in Seroepidemiological
Survey of Human Lymphoid Malignancies
See 0940

WOODARD, J. P.
Variable Data Base Generator Apparatus
See 0136

WRIGHT, J. T.
Bidirectional Amplifier
See 0238

WU, C.
Method and Apparatus for Self-Calibration and
Phasing of Array Antenna
See 0230
Pipelined Digital SAR Azimuth Correlator Using
Hybrid FFT-Transversal Filter
See 0207

WYATT, D.
Vaccine against Rotavirus Diseases
See 0952

WYSOR, M. S.
Anti-Trypanosomal Activity of Platinum Co-ordina-
tion Compounds
See 0884

XIE, Z. N.
Ovipositional Stimulant for Trichogramma Spp
See 0933

YACHNIS, M.
Original Method of Drydocking Ships
See 0735

YAGI, T.
Fluorination by Inorganic Fluorides in Glow Dis-
charge
See 0760

YAMAKAWA, K. A.
Apparatus and Method to Keep the Walls of a
Free-Space Reactor Free from Deposits of Solid
Materials
See 0496

YAMAKI, D. A.
Process for Preparing Solvent Resistant, Thermo-
plastic Aromatic Poly(Imidesulfone)
See 0832

YAMANO, L. C.
Bistatic Coherent Radar Receiving System
See 0189

YANG, A.
Mode Dependent, Optical Time Delay System for
Electrical Signals
See 0374

YANG, L. C.
Instrumentation for Sensing Moisture Content of
Material Using a Transient Thermal Pulse
See 0564

YANG, M. M.
Trace Water Sensor
See 0643

YARIV, A.
Arrangement for Damping the Resonance in a
Laser Diode
See 0990

YEE, K. W.
Rotating Tool Wear Monitoring Apparatus
See 0684

YETERIAN, V. H.
Optical System for Measuring Shadowgraph Data
See 0179

YIN, L. I.
Three-Dimensional and Tomographic Imaging
Device for X-ray and gamma-Ray Emitting Objects
See 0640

YIN, Y.
Gap and Stripline Combined Monitor
See 0547

YOAKUM, G. H.
Improved Polyethylene Glycol (PEG) Reagent
See 0913

YODER, M. N.
Method for Producing High Quality Germanium-
Germanium Nitride Interfaces for Germanium
Semiconductors and Device Produced Thereby
See 0343
Method of Reducing Impurity and Antisite Defects
in Semiconductor Crystal Materials, and Device
and Apparatus Respectively Produced from and
Utilizing Same
See 1094

YOULE, R. J.

YOULE, R. J.
Prevention of Graft Versus Host Disease Following Bone Marrow Transplantation
See 0892

YOUNG, C. E.
Excimer Laser Phototherapy for the Dissolution of Vascular Obstruction
See 0906

YOUNG, C. M.
Method of Making an Undersea, High Pressure Bulkhead Penetrator for Use with Fiber Optic Cables
See 0734

YOUNG, K. M.
High Voltage Power Supply
See 0262

YOUNG, L.
Frequency-Spreading Coupler
See 0256

YU, F. T. S.
System of White-Light Density Pseudocolor Encoding with Three Primary Colors
See 1070

YUSPA, S. H.
Synthetic Peptides for the Production of Specific Keratin Proteins
See 0087

ZAHN, R. L.
Variable Radius Lead Former
See 0691

ZALESAK, J. F.
Directional Line-Hydrophone Array Calibrator
See 0163

ZAROMB, S.
Electrochemical Methane Sensor
See 0530

ZEIGLER, J. M.
Conductor-Polymer Composite Electrode Materials
See 0775

Polysilane Positive Photoresist Materials and Methods for Their Use
See 0830

ZENOBI, T. J.
Passive Arm Retention Curtain
See 1111

ZEREN, J. D.
Self-Contained Hot-Hollow Cathode Gun Source Assembly
See 0384

ZIERDT, C. H.
Blood Lysis and Culture System
See 0899

ZIMMER, J. E.
Circumferentially Wrapped Carbon-Carbon Structure
See 0773

ZIMMERMANN, E. L.
Fast Shutter Apparatus
See 0665

ZIMMERSCHIED, A. B.
Detonation Transfer Evaluation Technique
See 0517

ZIPPERIAN, T. E.
Field-Effect Transistor Having a Superlattice Channel and High Carrier Velocities at High Applied Fields
See 0339

ZUBAL, I. G.
Nuclear Medicine Imaging System
See 0869

ZULCH, D. I.
Radar Calibration Using Direct Measurement Equipment and Oblique Photometry
See 0211

ZULEEG, R.
Self-Detecting Optical Sensors
See 0385

ZWEIG, M.
Enzyme-Linked Immunosorbent Assay (ELISA) for Determining Anti-Bodies against Herpes Simplex Virus (HSV) Types 1 and 2 in Human Sera
See 0905

ZWELLING, L. A.
Anti-Trypanosomal Activity of Platinum Co-ordination Compounds
See 0884

OTHER SOURCES OF INFORMATION

On the following pages are other sources of information highlighting Federal R&D and engineering results. Each one is designed to offer your organization a way to track applied and practical Federal technology.

Identify the latest and best know-how . . .

NTIS Tech Notes

A monthly service providing fact sheets to selected technologies

An NTIS *Tech Notes* subscription brings you selected "Fact Sheets" on the latest and best U.S. Government developed technologies and know-how. You will receive a set of concise, illustrated one page Fact Sheets for each category you select. And you have a choice of ten different categories. Only selected technologies are included.

Tech Notes does the work for you by presenting improved or proven processes, instruments, materials, equipment, software, services, and techniques. Much of this information comes from R&D activities at hundreds of Federal laboratories.

- Learn of new equipment, tools, and processes which can enhance your operation
- Take advantage of state-of-the-art advances
- Find out about new, applied software
- Discover improvements in applied engineering and sciences

Government Agencies identify their best technology developments. Sources include NASA, Department of Energy, National Bureau of Standards, Army Material Command, National Institutes of Health, Bureau of Mines, and many more.

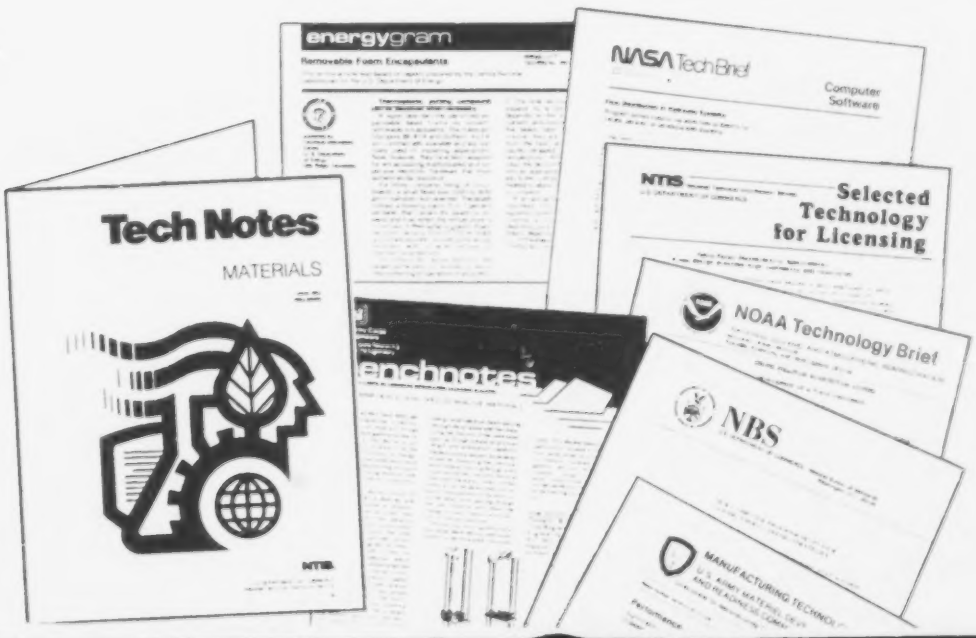
Subscribe now to one or more of the ten categories available:

Computers, Electotechnology, Energy, Engineering, Life Sciences, Machinery & Tools, Manufacturing, Materials, Physical Sciences, and Testing & Instrumentation

To subscribe

A single category subscription is $68 per year and includes the annual Federal Technology Catalog described elsewhere. Special discounts apply to each additional category you order.* To order, call our Subscription Department at (703) 487-4630.

* Prices for multiple copies:
2 for $127, 3 for $178, 4 for $224, 5 for $264, and 6 or more for $287



Quickly locate practical technologies . . .

Federal Technology Catalogs

A unique annual source to some of the best R&D and engineering results

Each annual catalog contains more than 1,000 summaries of selected processes, instruments, materials, equipment, software, services, and techniques. Each summary is created from a *Tech Notes* Fact Sheet described on the previous page.

No longer will you miss key results and developments which can assist your business or R&D effort to become more successful. In conjuction with Federal agencies and their laboratories, key practical and applied results are screened for interest to U.S. engineers, R&D managers, and business planners.

The summaries are arranged within 23 separate subject areas allowing for easy and quick referral. A detailed subject index lets you locate information at any time. These catalogs can be used over and over whenever you are looking for new ideas.

Examples from previous catalogs:

Coil Welding Aid: A positioner holds a coil inside a cylinder during tack welding...NASA

Random Life Curves for Common Engineering Materials: Computer program incorporates non-Rayleigh effects...NASA

Highly Stable Lasers for Precision Tests...National Bureau of Standards

Wood-Fueled Boiler Unit: Study evaluates the efficiency and emmisions...DOE

Voice Operated Controls and Switches are Developed... Veterans Administration

Fail-Safe Transfer Line for Hazardous Materials...EPA

Characterization Methods for Composite Reliability...Army Materials Command

To order

Please use the form at the end or call the NTIS sales desk at (703)-487-4650. Refer to the order number(s) below.

	NTIS Order Number	Price
1985 Catalog	PB86–116167/NAQ	$25.00
1984 Catalog	PB85–106987/NAQ	$23.50
1983 Catalog	PB84–105634/NAQ	$23.50
1982 Catalog	PB83–121533/NAQ	$19.50

0063 Researchers Test Device to Aid Cardiac Patients
Department of Health and Human Services, Washington, DC.
Aug 84 *(E)*
Administering a short negative voltage pulse after the positive pulse applied to convert fibrillating hearts to normal rhythm might improve the survival rate of cardiac patients. About 40 to 75 percent of the patients receiving emergency defibrillation die, according to estimates published in 1980. One reason is the damage to heart tissue caused by the pulse of electricity that earlier saved lives. A second, negative pulse following immediately after the positive pulse helps seal the membranes.
FOR ADDITIONAL INFORMATION: Contact: Research Resources Information Center, 1601 Research Blvd., Rockville, MD 20850; (301) 984-2870.

Serological Detection of Antibodies to HTLV-III in Sera of Patients with AIDS and pre-AIDS Conditions
See 0865

0064 Serum or Plasma Specimens from Transfusion-Transmitted Viruses Study are Available
Department of Health and Human Services, Washington, DC.
Oct 84 *(E)*
Serum or plasma specimens collected during a National Heart, Lung, and Blood Institute (NHLBI) study of transfusion-transmitted viruses are available to intramural and extramural scientists. Approximately 100,000 coded specimens of 2.5 milliliters (ml) each are contained in the NHLBI repository. More than 12,000 samples have been dispensed to investigators since 1981. The specimens are used primarily to evaluate the accuracy of screening tests to detect diseases transmitted by the transfusion of blood or blood products. The serum or plasma specimens may be used in other areas of investigation--for example, to study the suspected blood transmission of oncogenic viruses and of agents responsible for chronic degenerative disorders.
FOR ADDITIONAL INFORMATION: Contact: Dr. Luiz H. Barbosa, Federal Building, Room 5C-10, Division of [illegible] Diseases and [illegible]

BUILDING INDUSTRY TECHNOLOGY

point of connection to the ultrasonic transducer after about 15 seconds of operation. A considerably longer period - about 1 minute - is needed to ensure that the stone is adequately disintegrated. A new way of supporting the wire at and near the transducer reduces deformations and stresses.
FOR ADDITIONAL INFORMATION: This invention is owned by NASA, and a patent application has been filed. Inquiries concerning nonexclusive or exclusive license for its commercial development should be addressed to John O. Trasansky, Goddard Space Flight Center, Mail Code: 204, Greenbelt, MD 20771; (301) 344-7351. Otherwise contact Technology Transfer Division, P.O. Box 8757, BWI Airport, MD 21240. In either case refer to GSC-12652/TN.

0066 Ultrasonic Tranceiver Has Been Developed To Analyze Orthopedic and Neurological Problems
Veterans Administration, Washington, DC.
Apr 84 *(B, E, K)*
Researchers have developed a new gait-analysis mechanism that uses ultrasonic transmitters and receivers to study orthopedic and neurological problems. These mechanisms are attached to the patient's ankle. A calculation is made of the intervals of time between steps. This is then recorded on a chart. These charts are analyzed by doctors in a manner similar to the study of an electrocardiogram. A variety of abnormalties can be analyzed by these charts, and the doctor can determine the effectiveness of corrective procedures by matching before and after charts. The mechanism is contained in lucite blocks that are strapped on to the subject's ankle. The circuitry is contained in a pack that attaches to the subject's belt. A transceiver is used to convey the information so the patient will have freedom of movement. This new mechanism is called the Ultrasonic Stride Analyzer, and it is both inexpensive and easy to use. It is accurate enough to detect the gait of a subject who has one leg that is 1 cm shorter than the other.
FOR ADDITIONAL [illegible]

sists of two separate units: a voice recognition module and a control module.
FOR ADDITIONAL INFORMATION: Contact: Dr. John Trimble, Hines VA Hospital, P.O. Box 20, Hines, IL 60141; (312) 343-7200.

0068 Wheelchair Seat Suspension Has Been Developed
Veterans Administration, Washington, DC.
May 84 *(E, F)*
Road shocks and vibrations pose a crucial problem to users of unpowered wheelchairs. The severity of this problem can range from an annoyance to aggravation of pressure sores (decubiti). Many suspension systems have been posed to minimize this problem. The problem with most is that they require extensive modification of the wheelchair. Manufacturers are reluctant to adopt such designs. This design does not require such modifications to the wheelchair. Rather than adding suspensio to the chassis, as in previous designs, researchers suspended the seat. This suspension is accomplished with spring-loaded, post-type shock absorbers located between the upper and lower parts of the wheelchair chassis. A shock absorber is located near each corner of the seat. The shock absorbers dampen vibrations to the lower frame.
FOR ADDITIONAL INFORMATION: Contact: Dr. John Trimble, Hines VA Hospital, P.O. Box 20, Hines, IL 60141; (312) 343-7200.

BUILDING INDUSTRY TECHNOLOGY

0069 Algorithm Developed For Best HVAC Start/top Times
Department of Commerce, Washington, DC.
Mar 84 *(C)*
A researcher at the National Bureau of Standards Center for Building Technology has developed a simple [illegible] for determining [illegible]

Locate Inventions available for licensing. . .

Govenent Inventions for Licensing Newsletter

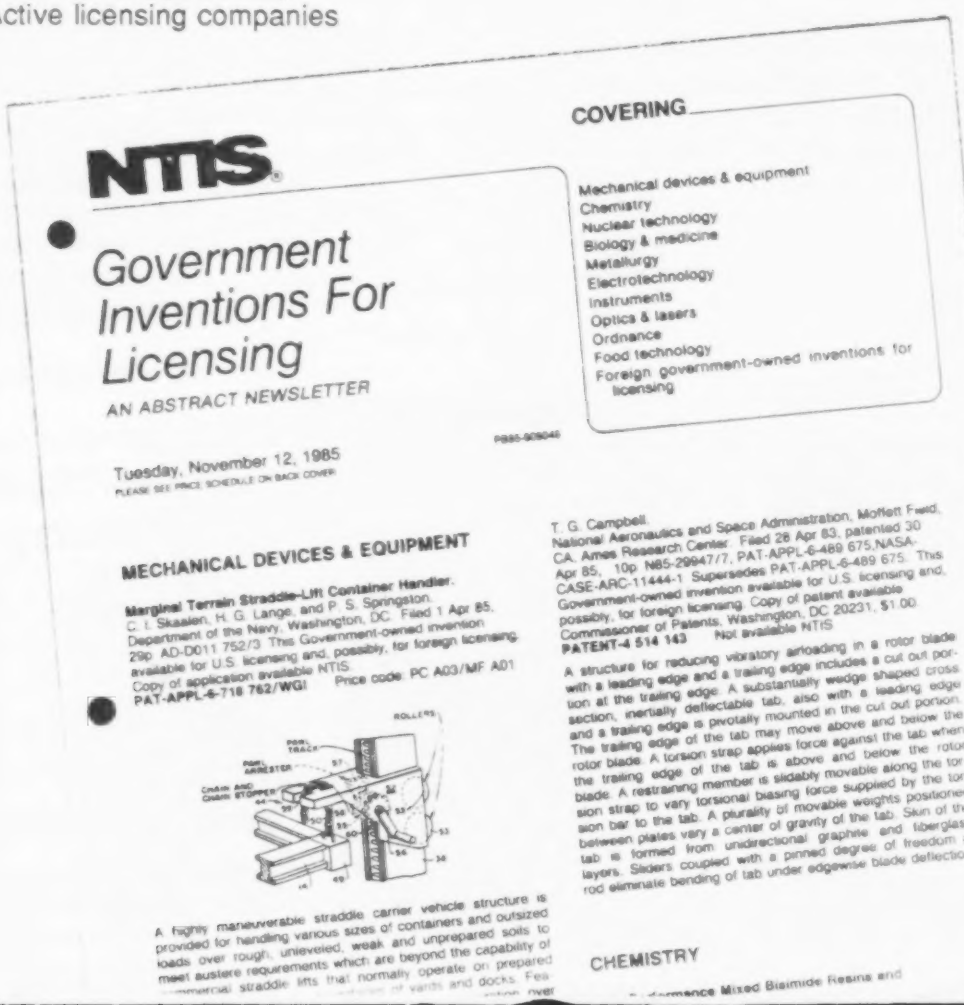
Comprehensive weekly coverage of all Federal agencies

Take this opportunity to receive early notice of valuable inventions available for licensing by subscribing to the *Government Inventions for Licensing Abstract Newsletter* Announcements of all newly issued U.S. Government-owned patent s and patent applications are sent to you each week. Each informative issue brings you a full technical summary and the principal drawing for each of 25 to 30 inventions.

These summaries are arranged into 10 subject areas, allowing for easy browsing. Active licensing companies will find the timeliness of this newsletter to be of extreme importance.

To subscribe

As a bonus to you, your subscription includes a copy of the annual Catalog of Government Patents described elsewhere. A single category subscription is $205 per year. To order, call our Subscription Department at (703) 487-4630.



NTIS

Government Inventions For Licensing

AN ABSTRACT NEWSLETTER

Tuesday, November 12, 1985

PLEASE SEE PRICE SCHEDULE ON BACK COVER

PB85-909048

COVERING

Mechanical devices & equipment
Chemistry
Nuclear technology
Biology & medicine
Metallurgy
Electrotechnology
Instruments
Optics & lasers
Ordnance
Food technology
Foreign government-owned inventions for licensing

MECHANICAL DEVICES & EQUIPMENT

Marginal Terrain Straddle-Lift Container Handler.
C. I. Skaalen, H. G. Lange, and P. S. Springston.
Department of the Navy, Washington, DC. Filed 1 Apr 85.
29p AD-D011 752/3. This Government-owned invention
available for U.S. licensing and, possibly, for foreign licensing.
Copy of application available NTIS.
PAT-APPL-6-718 762/WGI Price code: PC A03/MF A01

A highly maneuverable straddle carrier vehicle structure is provided for handling various sizes of containers and outsized loads over rough, unleveled, weak and unprepared soils to meet austere requirements which are beyond the capability of commercial straddle lifts that normally operate on prepared

T. G. Campbell.
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center. Filed 26 Apr 83, patented 30 Apr 85, 10p. N85-29947/7, PAT-APPL-6-489 675,NASA-CASE-ARC-11444-1. Supersedes PAT-APPL-6-489 675. This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231, $1.00.
PATENT-4 514 143 Not available NTIS

A structure for reducing vibratory airloading in a rotor blade with a leading edge and a trailing edge includes a cut out portion at the trailing edge. A substantially wedge shaped cross section, inertially deflectable tab, also with a leading edge and a trailing edge is pivotally mounted in the cut out portion. The trailing edge of the tab may move above and below the rotor blade. A torsion strap applies force against the tab when the trailing edge of the tab is above and below the rotor blade. A restraining member is slidably movable along the torsion strap to vary torsional biasing force supplied by the torsion bar to the tab. A plurality of movable weights positioned between plates vary a center of gravity of the tab. Skin of the tab is formed from unidirectional graphite and fiberglass layers. Sliders coupled with a pinned degree of freedom at rod eliminate bending of tab under edgewise blade deflection.

CHEMISTRY

...rmance Mixed Bismide Resins and

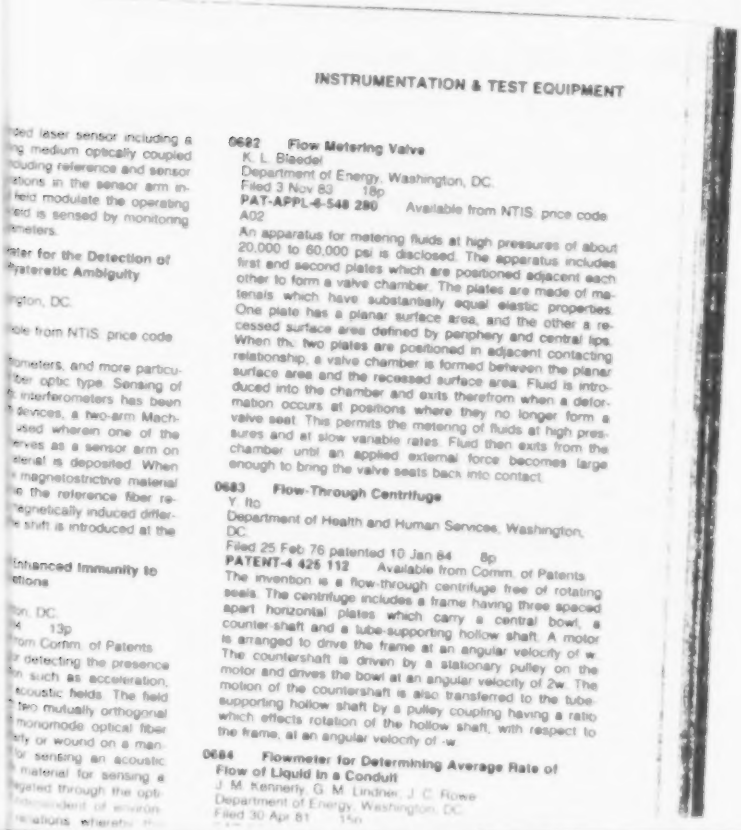
Locate inventions available for licensing . . .

Catalogs of Government Patents

Comprehensive annual coverage of all Federal agencies

Annually, U.S. Government agencies apply and receive patents on more than 1,200 inventions. These inventions can be licensed by U.S. businesses (often exclusively) as part of the Government's effort to encourage maximum use of the technologies it develops. It realizes the necessity of protecting the business investment required to bring these technologies to the marketplace. And to protect foreign markets, the Government often obtains foreign patent rights.

Each of these catalogs brings you detailed summaries of all inventions announced in a particular year. The summaries are arranged within 43 subject areas with thorough cross-referencing. Subject and Inventor Indexes are included.



INSTRUMENTATION & TEST EQUIPMENT

...ded laser sensor including a ...g medium optically coupled ...cluding reference and sensor ...ations in the sensor arm in- ...field modulate the operating ...ard is sensed by monitoring ...meters.

...ter for the Detection of ...Hysteretic Ambiguity

...ington, DC.

...ole from NTIS, price code

...rometers, and more particu- ...iber optic type. Sensing of ...e interferometers has been ...devices, a two-arm Mach- ...used wherein one of the ...erves as a sensor arm on ...aterial is deposited. When ...a magnetostrictive material ...ge the reference fiber re- ...agnetically induced differ- ...e shift is introduced at the

...Enhanced Immunity to ...ations

...ton, DC. ...x 13p ...from Comm. of Patents ...or detecting the presence ...on such as acceleration, ...acoustic fields. The field ...two mutually orthogonal ...monomode optical fiber ...ely or wound on a man- ...for sensing an acoustic ...material for sensing a ...gated through the opti- ...independent of environ- ...variations, whereby ...

0682 Flow Metering Valve
K. L. Blaedel
Department of Energy, Washington, DC.
Filed 3 Nov 83 18p
PAT-APPL-6-548 280 Available from NTIS, price code A02

An apparatus for metering fluids at high pressures of about 20,000 to 60,000 psi is disclosed. The apparatus includes first and second plates which are positioned adjacent each other to form a valve chamber. The plates are made of materials which have substantially equal elastic properties. One plate has a planar surface area, and the other a recessed surface area defined by periphery and central lips. When the two plates are positioned in adjacent contacting relationship, a valve chamber is formed between the planar surface area and the recessed surface area. Fluid is introduced into the chamber and exits therefrom when a deformation occurs at positions where they no longer form a valve seat. This permits the metering of fluids at high pressures and at slow variable rates. Fluid then exits from the chamber until an applied external force becomes large enough to bring the valve seats back into contact.

0683 Flow-Through Centrifuge
Y. Ito
Department of Health and Human Services, Washington, DC.
Filed 25 Feb 76 patented 10 Jan 84 8p
PATENT-4 425 112 Available from Comm. of Patents

The invention is a flow-through centrifuge free of rotating seals. The centrifuge includes a frame having three spaced apart horizontal plates which carry a central bowl, a counter-shaft and a tube-supporting hollow shaft. A motor is arranged to drive the frame at an angular velocity of w. The countershaft is driven by a stationary pulley on the motor and drives the bowl at an angular velocity of 2w. The motion of the countershaft is also transferred to the tube-supporting hollow shaft by a pulley coupling having a ratio which effects rotation of the hollow shaft, with respect to the frame, at an angular velocity of -w.

0684 Flowmeter for Determining Average Rate of Flow of Liquid in a Conduit
J. M. Kennerly, G. M. Lindner, J. C. Rowe
Department of Energy, Washington, DC.
Filed 30 Apr 81 35p

During the past year, more than 40 large and small businesses have pledged to invest 100 million dollars to bring selected inventions to market. Your firm could be one of this group.

These catalogs are easily browsed and referenced to help you in the difficult task of locating potential technologies.

Discover licensing opportunities like these:

- Monoclonial Antibodies Against Herpes Simplex Virus ...*licensed to Abbott Laboratories*
- Fiber Optic pH Probe....*licensed to Advanced Technology Laboratory, Inc.*
- Satellite Digital Clock...*licensed to Austron, Inc.*
- Composite Membrane for Reverse Osmosis... *licensed to Bend Research*
- Blood Cell Monitor..*licensed to IBM Corp.*

Steps in licensing Federal inventions

After you locate the invention you wish to consider licensing for commercial development.

- Obtain a copy of the patent or patent application for specific technical details. Full ordering information is provided in each catalog.
- After reviewing the technical description, if you still have interest, contact CUFT's Office of Federal Patent Licensing. This office will either refer you to the correct Federal licensing group within an agency, or will work directly with you in the licensing process. CUFT handles the licensing of inventions on behalf of many cooperating Federal agencies.

To order

Please use the form at the end or call the NTIS sales desk at (703)-487-4650. Refer to the order number(s) below.

	NTIS Order Number	Price
1985 Catalog	PB86–116175/NAQ	$29
1984 Catalog	PB85–106979/NAQ	$25
1983 Catalog	PB84–117589/NAQ	$25
1982 Catalog	PB83–159046/NAQ	$25
1981 Catalog	PB83–179192/NAQ	$25

Use Lotus 1-2-3™ or Symphony™. . .

Cashflow Sensitivity Analysis – Business Planning Software

Calculates return on investment(ROI) and profitability

Businesses now are able to calculate return on investment and profitability to evaluate their sensitvity to specific business factors. This software lets you ask "what if" questions about the effect of incremental changes in cost and market factors on the performance of your business operations. Graphs are developed presenting sensitivity curves for the various input factors.

Using the popular Lotus spreadsheets, the two models assist in business planning. One model determines rate of return on invested capital in a new project or business. The other determines the sensitivity of profitability for established business operations. For both models the time period is five years, and up to two product lines or services can be input. The results are based on generated cash flow schedules.

The software requires use of an IBM PC or compatible computer with 512K RAM and 2 disk drives.

To order

Please use the form at the end or call the NTIS sales desk at (703)-487-4650. Refer to the order number(s) below.

	NTIS Order Number	Price
1-2-3 version	PB85–184018/NAQ	$46
Symphony version	PB85–184000/NAQ	$46

Review eight current popular methods . . .

Evaluating R&D and New Product Development Ventures – An Overview of Assessment Methods

Familiarizes decision makers with the range of available techniques

This publication introduces eight techniques currently used to assess the business potential of new products or processes. These assessment methods range from the extremely simple to the very complex. The intent of this overview is to familarize decision makers with the range of available techniques.

Although the book is written from the point of view of a business making a new product decision, the principles involved may also be of interest to investors, financial intermediaries, individual entrepreneurs, and personnel who screen projects for possible commercial application.

The assessment techniques reviewed include: Checklist analysis, Constraint analysis, Environmental scoring models, Profitability measures, Sensitivity analysis, Risk analysis, Decision analysis and decision trees, and Assessment of probabilities.

To order

Please use the form at the end or call the NTIS sales desk at (703)-487-4650. Refer to the order number(s) below.

NTIS Order Number	Price
PB86–110806/NAQ	$12

*U.S. GOVERNMENT PRINTING OFFICE: 1986-491-097:46849

NTIS Order Form

Telephone orders (703) 487-4650

NTIS uses First Class Delivery , or equivalent service, on all shipping

Send orders to the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

Last Name: _____ First Initial: ___

Title: _____

Company/Organization: _____

Address: _____

Street: _____

City/State/Zip: _____

Telephone Number: ( ) _____

☐ Check or money order enclosed payable to NTIS for $_____.

☐ Charge to my NTIS Deposit Account number: _____

Charge to: ☐ American Express ☐ VISA ☐ MasterCard

Card Number: _____

Expiration Date: _____

Signature: _____
(Required to validate order)

Yes, I want to order the following:

Publication Products

Federal Technology Catalogs

copies

☐ ___ 1985 $25.00 (PB86-116167/NAQ)
☐ ___ 1984 $23.50 (PB85-106987/NAQ)
☐ ___ 1983 $23.50 (PB84-105634/NAQ)
☐ ___ 1982 $19.50 (PB83-121533/NAQ)

Catalog of Government Patents

☐ ___ 1985 $29 (PB86-116175/NAQ)
☐ ___ 1984 $25 (PB85-106979/NAQ)
☐ ___ 1983 $25 (PB84-117589/NAQ)
☐ ___ 1982 $25 (PB83-159046/NAQ)
☐ ___ 1981 $25 (PB83-179192/NAQ)

Cashflow Sensitivity Analysis – Business Planning Software

☐ ___ Lotus 1-2-3 Version $46 (PB86-184018/NAQ)
☐ ___ Lotus Symphony $46 (PB86-184000/NAQ)

Evaluating R&D and New Product Development Ventures – An Overview of Assessment Methods

☐ ___ $12 (PB86-110806/NAQ)

Small Business Guide to Federal R&D Funding Opportunities

☐ ___ $12.50 (PB86-100112/NAQ)

$_____ SUBTOTAL

$3.00 Shipping and handling fee

$_____ TOTAL

Subscription Products

To place your order, call the NTIS Subscription Department at (703) 487-4838.

Government Inventions for Licensing Abstract Newsletter

☐ $205 for 52 weekly issues

$_____ TOTAL

NTIS Tech Notes

☐ $_____ for the categories checked below:
__Computers __Electrotechnology __Energy __Civil Engineering __Life Sciences __Machinery & Tools __Manufacturing __Materials __Physical Sciences __Testing & Instrumentation

Prices for one or more categories: 1 for $68, 2 for $127, 3 for $178, 4 for $224, 5 for $264, all 10 for $287.

Patent Order Form

MAIL ORDER TO:

COMMISSIONER OF PATENTS AND TRADEMARKS
U.S. Patent and Trademark Office
Washington, DC 20231

Send me the patents I have selected on this form. I have placed patent numbers in the appropriate blanks.

Name _____

Organization _____

Address _____

City _____

State, Zip _____

Telephone (include area code): _____

METHOD OF PAYMENT

☐ Check enclosed for $_____
(Make check payable to: Commissioner of Patents and Trademarks)

ALL PATENTS ARE $1.00 EACH

PATENT NUMBER	QUANTITY	PRICE (All patents are $1.00 each)
PATENT— ☐☐☐☐☐☐☐☐	_____	_____
PATENT— ☐☐☐☐☐☐☐☐	_____	_____
PATENT— ☐☐☐☐☐☐☐☐	_____	_____
PATENT— ☐☐☐☐☐☐☐☐	_____	_____
PATENT— ☐☐☐☐☐☐☐☐	_____	_____
PATENT— ☐☐☐☐☐☐☐☐	_____	_____
	TOTAL	_____

© U.S. GOVERNMENT PRINTING OFFICE : 1986 O - 491-097 (46841) (2L)

Patent Application Order Form

MAIL ORDER TO:

National Technical Information Service
U.S. DEPARTMENT OF COMMERCE
Springfield, VA 22161

NTIS telephone order number: (703) 487-4650

Send me the patent applications I have selected on this form. I have placed patent application numbers on the appropriate blanks.

Name _____

Organization _____

Address _____

City _____

State, Zip _____

Telephone: _____

PRICE CODE SCHEDULE
NORTH AMERICAN CONTINENT

Please use this table to convert the price codes given in the invention summaries to actual values.

Customers in Canada, United States, and Mexico please us this price schedule: other addresses write for Folder Pr-360-4.

A01	$5.95 (Microfich copies only)
A02 and A03	$9.95
A04 and A05	$11.95
A06 through A09	$16.95
A10 through A13	$22.95
A14 through A17	$28.95
A18 through A21	$34.95
A22 through A25	$40.95
A99	Contact NTIS for price quote

Prices effective January 1, 1986

METHOD OF PAYMENT

- ☐ **Charge my NTIS deposit account no.** _____
- ☐ **Bill me ($7.50 added charge) Purchase order no.** _____
- ☐ **Check enclosed for $** _____
- ☐ **Charge to my: American Express** ☐ **Visa** ☐ **MasterCard** ☐

Account no. _____ Card expiration date _____

Signature _____
(Required to validate order)

Patent Application Number	Quantity	PRICE (Use price code table above
PAT-APPL—☐ ☐☐☐ ☐☐☐/NAD		
PAT-APPL—☐ ☐☐☐ ☐☐☐/NAD		
PAT-APPL—☐ ☐☐☐ ☐☐☐/NAD		
PAT-APPL—☐ ☐☐☐ ☐☐☐/NAD		
PAT-APPL—☐ ☐☐☐ ☐☐☐/NAD		
PAT-APPL—☐ ☐☐☐ ☐☐☐/NAD		

Yes, I would like to obtain previous issues of this catalog at $25 each

1984 Catalog, PB85-106979/NAD		
1983 Catalog, PB84-117589/NAD		
1982 Catalog, PB83-159046/NAD		
1981 Catalog, PB83-179192/NAD		
Add $3.00 for shipping and handling		$3.00
TOTAL		

To Return Order Form Please Fold Here First ▼

Please make second fold here and seal opening with tape

RETURN ENVELOPE

Please put stamp here

National Technical Information Service
U.S. DEPARTMENT OF COMMERCE
5285 Port Royal Road
Springfield, VA 22161

ABOUT NTIS

As a cornerstone of the technological publishing structure in the United States, the National Technical Information Service (NTIS) is a key participant in the development of advanced information products and services for the achievement of U.S. productivity and industrial innovation goals in the 1980's.

NTIS, an agency of the U.S. Department of Commerce, is the central source for the public sale of U.S. Government-sponsored research, development, and engineering reports, and for sales of foreign technical reports and other analyses prepared by national and local government agencies and their contractors or grantees.

And, it is the central source for:

- federally generated machine processable data files and software;
- licensing U.S. Government-owned patents.

NTIS manages the:

- *Center for the Utilization of Federal Technology (CUFT)*, which alerts U.S. industry to specially selected technology having immediate practical value;
- *Federal Software Exchange Center*, for the exchange of computer software among Federal agencies, with public availability through NTIS.

Consequently, NTIS is one of the world's leading processors of specialty information.

The NTIS information collection is approaching two million titles, several hundred thousand of which contain foreign technology or foreign marketing information. All are permanently available for sale, either directly from 80,000 titles in shelf stock or from microform master copies of documents that are less in demand. Annually, NTIS supplies its customers with more than six million documents and microforms, shipping about 24,000 information items daily.

Full summaries of current U.S. and foreign research reports and other specialized information, in hundreds of subject categories, are published regularly by NTIS in a wide variety of newsletters, journals, and indexes, and in a variety of subscription formats for other Federal agencies. The complete texts of the technical reports cited are sold in paper and microform.

Some 70,000 new technical reports of completed research are added annually to the *NTIS Bibliographic Data Base*. Anyone seeking the latest technical reports or wanting to compile unique subject groups of abstracts may search the *NTIS Bibliographic Data Base* online using the services of vendors or organizations that maintain the NTIS data base for public use. The whole data base in machine readable form may be leased directly from NTIS.

The more timely documents in the NTIS collection are selected by category and sold as paperbound *Published Searches*, covering some 3,000 topical subject areas.

Customers with well defined continuing interests may subscribe to a standing order microfiche service *(SRIM)* which enables them to automatically receive the full texts of only those documents relating to their individual requirements.

NTIS sells its technical information products and services under the provisions of Title 15 of the U.S. Code (1151-7). The law established a clearinghouse for scientific, technical, and engineering information within the Department of Commerce and directed that it be self-supporting.

NTIS, therefore, is a unique Government agency supported by its customers. All costs, such as salaries, manufacturing, information acquisition, marketing and postage, are paid from sales income; not from tax-supported congressional appropriations, certain developmental programs excepted.

CONTENTS:

Agriculture & Food
Chemistry
Communications
Computers
Couplings, Fittings, & Fasteners
Detection
Electrotechnology
Energy
Hydraulic & Pneumatic Equipment
Instrumentation & Test Equipment
Machinery & Tools
Manufacturing Processes
Marine Technology
Materials
Medicine & Biology
Mining
Navigation & Guidance
Photography & Recording Devices
Physics
Transportation

ISBN 0-934213-01-1